OM protein - protein search, using sw model

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GenCore version 4.5

Run on: March 17, 2001, 09:43:21 ; Search time 20.85 Seconds
                                                    (without alignments)
                                                    249.762 Million cell updates/sec

Post-processing: Minimum Match 0%
                  Maximum Match 100%
                  Listing first 45 summaries

Database :   Issued_Patents_AA:*
      1: /cgn2_6/ptodata/2/iaa/5A_COMB.pep:*
      2: /cgn2_6/ptodata/2/iaa/5B_COMB.pep:*
      3: /cgn2_6/ptodata/2/iaa/6_COMB.pep:*
      4: /cgn2_6/ptodata/2/iaa/PCTUS_COMB.pep:*
      5: /cgn2_6/ptodata/2/iaa/backfiles1.pep:*

Title: US-09-451-291-1
Perfect score: 1511
Sequence: 1 MRIFAVFIFMTVWHLLNAFT.........KCGIQDTNSKKQSDTHLEET 290

Scoring table: BLOSUM62
               Gapop 10.0 , Gapext 0.5

Searched: 174772 seqs, 1795048 residues

Total number of hits satisfying chosen parameters: 174772

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result NO.	Score	% Query Match	Length	DB	ID	Description
1	177.5	11.7	306	2	US-08-147-772-4	Sequence 4, Appli
2	177.5	11.7	306	2	US-08-456-104-8	Sequence 8, Appli
3	177.5	11.7	306	2	US-08-101-624-25	Sequence 25, Appli
4	177.5	11.7	306	3	US-08-153-262-4	Sequence 4, Appli
5	177.5	11.7	306	3	US-08-479-744A-31	Sequence 31, Appli
6	177.5	11.7	306	3	US-08-280-757B-31	Sequence 31, Appli
7	177.5	11.7	306	3	US-09-159-135-4	Sequence 4, Appli
8	172	11.7	306	2	US-08-147-772-2	Sequence 2, Appli
9	172	11.4	288	2	US-08-456-104-6	Sequence 6, Appli
10	172	11.4	288	2	US-08-101-624-23	Sequence 23, Appli
11	172	11.4	288	2	US-08-751-767A-6	Sequence 6, Appli
11	172	11.4	288	3	US-08-153-262-2	Sequence 2, Appli
12	172	11.4	288	3	US-08-479-744A-29	Sequence 29, Appli
13	172	11.4	288	3	US-08-280-757B-29	Sequence 29, Appli
14	172	11.4	288	3	US-09-159-135-2	Sequence 2, Appli
15	172	11.4	288	2	US-09-159-135-2	Sequence 2, Appli
16	172	11.4	288	2	PCT-US95-02576-19	Sequence 19, Appli
17	169.5	11.4	306	4	PCT-US95-02576-17	Sequence 17, Appli
18	169.5	11.2	320	4	PCT-US94-09642-2	Sequence 2, Appli
19	161.5	10.7	323	4	PCT-US94-09642-2	Sequence 2, Appli
20	161.5	10.7	329	2	US-08-456-104-2	Sequence 2, Appli
21	161.5	10.7	329	2	US-08-101-624-2	Sequence 2, Appli
22	161.5	10.7	329	3	US-08-479-744A-2	Sequence 2, Appli
23	161.5	10.7	329	3	US-08-280-757B-2	Sequence 2, Appli
24	161.5	10.7	329	4	PCT-US95-02576-23	Sequence 23, Appli
25	158.5	10.5	208	3	US-08-630-172-15	Sequence 15, Appli
26	154.5	10.2	589	2	US-08-724-394A-1	Sequence 1, Appli
27	144	9.5	581	2	US-08-724-394A-3	Sequence 3, Appli
28	139.5	9.2	319	1	US-08-597-495B-22	Sequence 22, Appli
29	138	9.1	581	2	US-08-724-394A-2	Sequence 2, Appli
30	137	9.1	365	2	US-08-979-424-3	Sequence 3, Appli
31	127.5	8.4	309	2	US-08-456-104-4	Sequence 4, Appli
32	127.5	8.4	309	3	US-08-479-744A-23	Sequence 23, Appli
33	127.5	8.4	309	3	US-08-280-757B-23	Sequence 23, Appli
34	127.5	8.4	309	4	PCT-US95-02576-21	Sequence 21, Appl
35	127.5	8.4	314	4	PCT-US95-02576-13	Sequence 13, Appl
36	126	8.3	1106	1	US-08-180-195-2	Sequence 2, Appli
37	126	8.3	1106	1	US-08-168-917-2	Sequence 2, Appli
38	126	8.3	1106	1	US-08-477-329-2	Sequence 2, Appli
39	126	8.3	1106	2	US-08-475-458-2	Sequence 2, Appli
40	126	8.3	1106	2	US-08-460-510-2	Sequence 2, Appli
41	126	8.3	1106	2	US-08-460-490-2	Sequence 2, Appli
42	126	8.3	1106	3	US-08-980-400-2	Sequence 2, Appli
43	126	8.3	1106	3	US-08-462-728-4	Sequence 4, Appli
44	126	8.3	1106	4	PCT-US92-00730-2	Sequence 2, Appli
45	126	8.3	1106	4	PCT-US92-00862-2	Sequence 2, Appli

ALIGNMENTS

stringent conditions - could be ant [handwritten]

RESULT 1
US-08-147-772-4
; Sequence 4, Application US/08147772
; Patent No. 5858776 *
; GENERAL INFORMATION:
; APPLICANT: Ostrand-Rosenberg, Suzanne
; APPLICANT: Baskar, Sivasubramanian
; APPLICANT: Glimcher, Laurie H.
; APPLICANT: Freeman, Gordon J.
; APPLICANT: Nadler, Lee M.
; TITLE OF INVENTION: Tumor Cells With Increased Immunogenicity
; NUMBER OF SEQUENCES: 4
; CORRESPONDENCE ADDRESS:
;   ADDRESSEE: LAHIVE & COCKFIELD
;   STREET: 60 State Street, Suite 510
;   CITY: Boston
;   STATE: Massachusetts
;   COUNTRY: USA
;   ZIP: 02109
; COMPUTER READABLE FORM:
;   MEDIUM TYPE: Floppy disk
;   COMPUTER: IBM PC compatible
;   OPERATING SYSTEM: PC-DOS/MS-DOS
;   SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
;   APPLICATION NUMBER: US/08/147,772
;   FILING DATE:
;   CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
;   APPLICATION NUMBER:
;   FILING DATE:
; ATTORNEY/AGENT INFORMATION:
;   NAME: Mandragouras, Amy E.
;   REGISTRATION NUMBER: 36,207
;   REFERENCE/DOCKET NUMBER: RPI-003
; TELECOMMUNICATION INFORMATION:
;   TELEPHONE: (617) 227-7400
;   TELEFAX: (617) 227-5941
; INFORMATION FOR SEQ ID NO: 4:
;   SEQUENCE CHARACTERISTICS:
;   LENGTH: 306 amino acids
;   TYPE: amino acid
;   TOPOLOGY: linear
;   MOLECULE TYPE: protein
;   DESCRIPTION: B lymphocyte activation antigen;
;   DESCRIPTION: superfamily member; T cell costimulatory signal
;   DESCRIPTION: via activation of CD28 pathways, binds to CD28+
;   DESCRIPTION: T cells, transmembrane protein
; FEATURE:
;   NAME/KEY: signal sequence
;   LOCATION: -37 to -1

RESULT 2
US-08-456-104-8

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;       IDENTIFICATION METHOD: similarity with known
;         sequence
;       OTHER INFORMATION: hydrophobic
; FEATURE:
;       NAME/KEY: extracellular domain
;       LOCATION: 1 to 210
;       IDENTIFICATION METHOD: similarity with known
;         sequence
; FEATURE:
;       NAME/KEY: transmembrane domain
;       LOCATION: 211 to 235
;       IDENTIFICATION METHOD: similarity with known
;         sequence
; FEATURE:
;       NAME/KEY: intracellular (cytoplasmic) domain
;       LOCATION: 236 to 269
;       IDENTIFICATION METHOD: similarity with known
;         sequence
; FEATURE:
;       NAME/KEY: Ig V-set domain
;       LOCATION: 1 to 105
;       IDENTIFICATION METHOD: similarity with known
;         sequence
; FEATURE:
;       NAME/KEY: Ig C-set domain
;       LOCATION: 106 to 199
;       IDENTIFICATION METHOD: similarity with known
;         sequence
; PUBLICATION INFORMATION:
;       AUTHORS: FREEMAN, GORDON J.
;       AUTHORS: GRAY, GARY S.
;       AUTHORS: GIMMI, CLAUDE D.
;       AUTHORS: LOMBARD, DAVID B.
;       AUTHORS: ZHOU, LIANG-JI
;       AUTHORS: WHITE, MICHAEL
;       AUTHORS: FINGEROTH, JOYCE D.
;       AUTHORS: GRIBBEN, JOHN G.
;       AUTHORS: NADLER, LEE M.
;       TITLE: Structure, Expression, and T Cell Costimulatory
;       TITLE: Activity Of The Murine Homologue Of The Human B
;       TITLE: Lymphocyte Activation Antigen B7
;       JOURNAL: Journal of Experimental Medicine
;       VOLUME:
;       ISSUE:
;       PAGES:
;       DATE:   IN PRESS
; RELEVANT RESIDUES IN SEQ ID NO: 4: From -37 to 269
US-08-147-772-4

Query Match             11.7%;   Score 177.5;  DB 2;   Length 306;
Best Local Similarity   26.6%;   Pred. No. 3.4e-10;
Matches  57;  Conservative  36;  Mismatches  92;  Indels  29;  Gaps  11;

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Qy  115  MI------SYGGADYKRITVKVNAPYNKINQRILVVD---PVTSEHELTCQAE-GYPKAE  164
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Db  120  VVQKKERGTYGVKHLALVKLSIKADFSTPN----ITESGNPSADTKRITCFASGGFPKPR  175

Qy  165  VIWTSSDHQVLSGKTTTINSKREEKLFNVTSTLRINTTTNEIFYCTFRRLDPEENHTAEL  224
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Db  176  FSWLENGRE-LPGINTTISQDPESELYTISSQLDFNTTRNHTIKCLIKYGDA---HVSED  231

Qy  225  VIPELPLAHPPNERTHLVILGAILLCLGVALTFI  258
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Db  232  FTWEKPPEDPPDSKNTLVLFGA---GFGAVIVV  262
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Sequence 8, Application US/08456104
Patent No. 5861310
GENERAL INFORMATION:
```
;       APPLICANT: Freeman, Gordon J.
;       APPLICANT: Nadler, Lee M.
;       APPLICANT: Gray, Gary S.
;   TITLE OF INVENTION: TUMOR CELLS MODIFIED TO EXPRESS B7-2 AND B7-3 WITH INCREASE
;   NUMBER OF SEQUENCES: 8
;   CORRESPONDENCE ADDRESS:
;       ADDRESSEE: LAHIVE & COCKFIELD
;       STREET: 60 State Street, Suite 510
;       CITY: Boston
;       STATE: Massachusetts
;       COUNTRY: USA
;       ZIP: 02109
;   COMPUTER READABLE FORM:
;       MEDIUM TYPE: Floppy disk
;       COMPUTER: IBM PC compatible
;       OPERATING SYSTEM: PC-DOS/MS-DOS
;       SOFTWARE: PatentIn Release #1.0, Version #1.25
;   CURRENT APPLICATION DATA:
;       APPLICATION NUMBER: US/08/456,104
;       FILING DATE:
;       CLASSIFICATION: 424
;   PRIOR APPLICATION DATA:
;       APPLICATION NUMBER: 08/101,624;
;       FILING DATE: 26-JUL-1993;
;       APPLICATION NUMBER: 08/109,393;
;       APPLICATION NUMBER: 19-AUG-1993
;   ATTORNEY/AGENT INFORMATION:
;       NAME: Mandragouras, Amy E.
;       REGISTRATION NUMBER: 36,207
;       REFERENCE/DOCKET NUMBER: RPI-008
;   TELECOMMUNICATION INFORMATION:
;       TELEPHONE: (617) 227-7400
;       TELEFAX: (617) 227-5941
; INFORMATION FOR SEQ ID NO: 8:
;   SEQUENCE CHARACTERISTICS:
;       LENGTH: 306 amino acids
;       TYPE: amino acid
;       TOPOLOGY: linear
;   MOLECULE TYPE: protein
US-08-456-104-8

Query Match             11.7%;   Score 177.5;  DB 2;   Length 306;
Best Local Similarity   26.6%;   Pred. No. 3.4e-10;
Matches  57;  Conservative  36;  Mismatches  92;  Indels  29;  Gaps  11;

Qy   55  VYWEMEDKNIIQFVHGEEDLKVQHSSYRQRARLLKDQLSLGNAALQITDVKLQDAGVYRC  114
         :||:  || :|| :  |||  |  | || ||| | :| | |||  | | |||| |
Db   68  IYWQKHDKVVLSVIAGK--LKV-WPEYKNRT--LYDNTTY---SLIIGLVLSDRGTYSC  119

Qy  115  MI------SYGGADYKRITVKVNAPYNKINQRILVVD---PVTSEHELTCQAE-GYPKAE  164
         :|       |||  | :| || |   |  || ||:|  ||  || || ||:| |||| |
Db  120  VVQKKERGTYGVKHLALVKLSIKADFSTPN----ITESGNPSADTKRITCFASGGFPKPR  175

Qy  165  VIWTSSDHQVLSGKTTTINSKREEKLFNVTSTLRINTTTNEIFYCTFRRLDPEENHTAEL  224
         || ||  ||| |  :   :  |||| |  | ||  |    :  :|| |  || : |
Db  176  FSWLENGRE-LPGINTTISQDPESELYTISSQLDFNTTRNHTIKCLIKYGDA---HVSED  231

Qy  225  VIPELPLAHPPNERTHLVILGAILLCLGVALTFI  258
         :|| : |  |   |||| || ||:|||  | :|
Db  232  FTWEKPPEDPPDSKNTLVLFGA---GFGAVIVV  262
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RESULT 3
US-08-101-624-25
Sequence 25, Application US/08101624
Patent No. 5942607
GENERAL INFORMATION:
```
;       APPLICANT: Freeman, Gordon J.
;       APPLICANT: Nadler, Lee M.
```

APPLICANT: Gray, Gary S.
TITLE OF INVENTION: No. 5942607el CTLA4/CD28 Ligands and
NUMBER OF INVENTION: Uses Therefor
NUMBER OF SEQUENCES: 25
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 60 State Street, Suite 510
CITY: Boston
STATE: Massachusetts
COUNTRY: USA
ZIP: 02109
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/101,624
FILING DATE: 26-JUL-1993
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
ATTORNEY/AGENT INFORMATION:
NAME: Mandragouras, Amy E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: RPI-004
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 227-7400
TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 25:
SEQUENCE CHARACTERISTICS:
LENGTH: 306 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
DESCRIPTION: B lymphocyte activation antigen; Ig
DESCRIPTION: superfamily member; T cell costimulatory signal
DESCRIPTION: via activation of CD28 pathways, binds to CD28+
DESCRIPTION: T cells, transmembrane protein
FEATURE:
NAME/KEY: signal sequence
LOCATION: -37 to -1
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
OTHER INFORMATION: hydrophobic
FEATURE:
NAME/KEY: extracellular domain
LOCATION: 1 to 210
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: transmembrane domain
LOCATION: 211 to 235
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: intracellular (cytoplasmic) domain
LOCATION: 236 to 269
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: Ig V-set domain
LOCATION: 1 to 105
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: Ig C-set domain
LOCATION: 106 to 199
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
PUBLICATION INFORMATION:
AUTHORS: FREEMAN, GORDON J.

AUTHORS: GRAY, GARY S.
AUTHORS: GIMMI, CLAUDE D.
AUTHORS: LOMBARD, DAVID B.
AUTHORS: ZHOU, LIANG-JI
AUTHORS: WHITE, MICHAEL
AUTHORS: FINGEROTH, JOYCE D.
AUTHORS: GRIBBEN, JOHN G.
AUTHORS: NADLER, LEE M.
TITLE: Structure, Expression, and T Cell Costimulatory
TITLE: Activity Of The Murine Homologue Of The Human B
TITLE: Lymphocyte Activation Antigen B7
JOURNAL: Journal of Experimental Medicine
VOLUME:
ISSUE:
PAGES:
DATE: IN PRESS
RELEVANT RESIDUES IN SEQ ID NO: 25: From -37 to 269

US-08-101-624-25

Query Match
Best Local Similarity 11.7%; Score 177.5; DB 2; Length 306;
Matches 57; Conservative 36; Mismatches 92; Indels 29; Gaps 11;

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Qy    55 VYWEMEDKNIIQFVHGEEDLKVQHSSYRQRARLLKDQLSLGNAALQITDVKLQDAGVYRC 114
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Db    68 IYWQKHDKVVLSVIAGK--LKV-WPEYKNRT--LYDNTTY---SLIIGLVLSDRGTYSC 119

Qy   115 MI------SYGGADYKRITVKVNAPYNKINQRILVVD---PVTSEHELTCQAE-GYPKAE 164
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Db   120 VVQKKERGTYGVKVHLALVKLSIKADPSTPN---ITESGNPSADYIKRITCFASGGFPKPR 175

Qy   165 VIWTSSDHQVLSGKTTTTNSKREEKLFNVTSTLRINTTTNEIFYCTFRRLDPEENHTAEL 224
          : |  |:  : | :|| | |:| ||| |:| | | | ::|  | |   | |  |: | :|
Db   176 FSWLENGRE-LPGINTTISQDPESELYTISSQLDENTTRNHTIKCLIKYGDA---HVSED 231

Qy   225 VIPELPLAHPPNERTHLVIIGAILLCLGVALTFI 258
          : |  |    |: |  | :| || | || || |
Db   232 FTWEKPEDPPDSKNTLVLFGA---GFGAVITVV 262
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RESULT 4
US-08-153-262-4
Sequence 4, Application US/08153262
Patent No. 6071716
GENERAL INFORMATION:
APPLICANT: FREEMAN, GORDON J.
APPLICANT: NADLER, LEE M.
APPLICANT: FREEDMAN, ARNOLD S.
TITLE OF INVENTION: DNA Encoding B7, A New Member
TITLE OF INVENTION: Of The IgG Superfamily With Unique Expression On
TITLE OF INVENTION: Activated And Neoplastic B Cells.
NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
ADDRESSEE: The Dana-Farber Cancer Institute
STREET: 44 Binney Street
CITY: Boston
STATE: Massachusetts
COUNTRY: U.S.A.
ZIP: 02115
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 3.50 inch, 720kb storage
COMPUTER: IBM Personal System 2; Model 30
OPERATING SYSTEM: MS/DOS
SOFTWARE: WordPerfect 5.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/153,262
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/751,306
FILING DATE: 28-AUG-1991
ATTORNEY/AGENT INFORMATION:

NAME: HART, JULIA D.
REGISTRATION NUMBER: 33132
REFERENCE/DOCKET NUMBER: DFCI-116.1
TELECOMMUNICATION INFORMATION:
TELEPHONE: (203) 255-8900
TELEFAX: (203) 259-2846
INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 306 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
DESCRIPTION: B lymphocyte activation antigen; Ig
DESCRIPTION: superfamily member; T cell costimulatory signal
DESCRIPTION: via activation of CD28 pathways, binds to CD28+
DESCRIPTION: T cells, transmembrane protein
FEATURE:
NAME/KEY: signal sequence
LOCATION: -37 to -1
IDENTIFICATION METHOD: similarity with known
OTHER INFORMATION: hydrophobic
FEATURE:
NAME/KEY: extracellular domain
LOCATION: 1 to 210
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: Ig V-set domain
LOCATION: 1 to 105
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: Ig C-set domain
LOCATION: 106 to 199
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: transmembrane domain
LOCATION: 211 to 235
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: intracellular (cytoplasmic) domain
LOCATION: 236 to 269
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence

PUBLICATION INFORMATION:
AUTHORS: FREEMAN, GORDON J.
AUTHORS: GRAY, GARY S.
AUTHORS: GIMMI, CLAUDE D.
AUTHORS: LOMBARD, DAVID B.
AUTHORS: ZHOU, LIANG-JI
AUTHORS: WHITE, MICHAEL
AUTHORS: FINGEROTH, JOYCE D.
AUTHORS: GRIBBEN, JOHN G.
AUTHORS: NADLER, LEE M.
TITLE: Structure, Expression, and T Cell Costimulatory
TITLE: Activity Of The Murine Homologue Of The Human B
TITLE: Lymphocyte Activation Antigen B7
JOURNAL: Journal of Experimental Medicine
VOLUME:
ISSUE:
PAGES:
DATE: IN PRESS
RELEVANT RESIDUES IN SEQ ID NO: 4: From -37 to 269
US-08-153-262-4

Query Match   11.7%; Score 177.5; DB 3; Length 306;
Best Local Similarity   26.6%; Pred. No. 3.4e-10;
Matches 57; Conservative 36; Mismatches 92; Indels 29; Gaps 11;

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Qy   55 VYWEMEDKNIIQFVHGEEDLKVQHSSYRQRARLLKDQLSLGNAALQIT KLQDAGVYKC 114
            :||:  ||| | ||:|  |:|  :|  |:| || || | | ||||  |  | || |||
Db   68 IYWQKHDKVVLSVIAGK--LKV-WPEYKNRT--LYDNTIY---SLIILGLVLSDRGTYSC 119

Qy  115 MI------SYGGADYKRITVKVNAPYNKINQRILVVD---PVISEHELTCQAE-GYPKAE 164
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Db  120 VVQKKERGTYGVKHLALYKLSIKADFSTPN----ITESGNPSADTKRITCFASGGFPKPR 175

Qy  165 VIWTSSDHQVLSGKTTTTNSKREEKLFNVTSTLRINTTTNEIFYCTFRRLDPEENHTAEL 224
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Db  176 FSWLENGRE-LPGINTIISQDPESELYTISSQLDFNTTRNHTIKCLIKYGDA---HVSED 231

Qy  225 VIPELPLAHPPNERTHLVILGAILLCLGVALTFI 258
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Db  232 FTWEKPPEDPPDSKNTLVLFGA---GFGAVITVV 262
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RESULT 5
US-08-479-744A-31
Sequence 31, Application US/0847744A
Patent No. 6084067
GENERAL INFORMATION:
APPLICANT: Freeman, Gordon J.
APPLICANT: Nadler, Lee M.
APPLICANT: Gray, Gary S.
TITLE OF INVENTION: No. 6084067e1 CTLA4/CD28 Ligands and
TITLE OF INVENTION: Uses Therefor
NUMBER OF SEQUENCES: 55
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD, LLP
STREET: 60 State Street
CITY: Boston
STATE: Massachusetts
COUNTRY: USA
ZIP: 02109
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/479,744A
FILING DATE: June 7, 1995
PRIOR APPLICATION DATA:
CLASSIFICATION: 435
APPLICATION NUMBER: 08/280,757
FILING DATE: 26-JUL-1994
APPLICATION NUMBER: 08/109,393
FILING DATE: 28-AUG-1993
APPLICATION NUMBER: 08/101,624
FILING DATE: 26-JULY-1993
APPLICATION NUMBER: 08/147,773
FILING DATE: 3-NOV-1993
ATTORNEY/AGENT INFORMATION:
NAME: Mandragouras, Amy E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: RPI-004CP3
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 227-7400
TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 31:
SEQUENCE CHARACTERISTICS:
LENGTH: 306 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
DESCRIPTION: B lymphocyte activation antigen; Ig
DESCRIPTION: superfamily member; T cell costimulatory signal
DESCRIPTION: via activation of CD28 pathways, binds to CD28+
DESCRIPTION: T cells, transmembrane protein
FEATURE:
NAME/KEY: signal sequence
LOCATION: -37 to -1

RESULT 6
US-08-280-757B-31

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Qy  232  FTWEKPPEDPPDSKNTLVLFGA---GFGAVITVV 262
         ||| : ||  :||  :|  |||
Db  225  VIPELPLAHPPNERTHIVILGAILLCLGVALTFI 258

Qy  176  FSWLENGRE-LPGINTTISQDPESELYTISSQLDFNTTRNHHIKCLIKYGDA---HVSED 231
         : | :  ||  :| :| : |||
Db  165  VIWTSSDHQVLSGKTTTTNSKREEKLFNVTSTLRINTTTNEIFYCTFRRLDPEENHTAEL 224

Qy  120  VVOKKERGTYGVKHLALVKLSIKADFSTPN----ITLESGNPSADTKRITCFASGGFPKPR 175
            ::          :|||               : ||| :  |||
Db  115  MI------SYGADYKRITVKVNAPYNKINQRILVVD---PVTSEHELTCQAE-GYPKAE 164

Qy   68  IYWQKHDKVVLSVIAGK--LKV-WPEYKNRT--LYDNTTY---SLIILGLVLSDRGTYSC 119
         :||: |   :|| : |   |||           |  :| :     |:|| |||:| :||
Db   55  VYWEMEDKNIIQFVHGEEDLKVQHSSYRQRARLLKDQLSLGNAALQITDVKLQDAGVYRC 114
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Matches 57;   Conservative 36;   Mismatches 92;   Indels 29;   Gaps 11;
Best Local Similarity 26.6%;   Pred. No. 3.4e-10;
Query Match 11.7%;   Score 177.5;   DB 3;   Length 306;

US-08-479-744A-31
RELEVANT RESIDUES IN SEQ ID NO: 31: From -37 to 269

IDENTIFICATION METHOD: sequence
IDENTIFICATION METHOD: similarity with known
LOCATION: 106 to 199
NAME/KEY: Ig C-set domain
FEATURE:
IDENTIFICATION METHOD: sequence
IDENTIFICATION METHOD: similarity with known
LOCATION: 1 to 105
NAME/KEY: Ig V-set domain
FEATURE:
IDENTIFICATION METHOD: sequence
IDENTIFICATION METHOD: similarity with known
LOCATION: 236 to 269
NAME/KEY: intracellular (cytoplasmic) domain
FEATURE:
IDENTIFICATION METHOD: sequence
IDENTIFICATION METHOD: similarity with known
LOCATION: 211 to 235
NAME/KEY: transmembrane domain
FEATURE:
IDENTIFICATION METHOD: sequence
IDENTIFICATION METHOD: similarity with known
LOCATION: 1 to 210
NAME/KEY: extracellular domain
FEATURE:
IDENTIFICATION METHOD: sequence
IDENTIFICATION METHOD: similarity with known
OTHER INFORMATION: hydrophobic
IDENTIFICATION METHOD:

Sequence 31, Application US/08280757B
Patent No. 6130316

GENERAL INFORMATION:
APPLICANT: Freeman, Gordon J.
APPLICANT: Nadler, Lee M.
APPLICANT: Gray, Gary S.
APPLICANT: Greenfield, Edward
TITLE OF INVENTION: No. 6130316el CTLA4/CD28 Ligands and
TITLE OF INVENTION: Uses Therefor
NUMBER OF SEQUENCES: 53
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 60 State Street, Suite 510
CITY: Boston
STATE: Massachusetts
COUNTRY: USA
ZIP: 02109

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/280,757B
FILING DATE: 26-JUL-1994
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/101,624
FILING DATE: 26-JULY-1993
APPLICATION NUMBER: 08/109,393
FILING DATE: 19-AUG-1993
APPLICATION NUMBER: 08/147,773
FILING DATE: 3-NOV-1993
ATTORNEY/AGENT INFORMATION:
NAME: Mandragouras, Amy E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: RPI-004CP2
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 227-7400
TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 31:
SEQUENCE CHARACTERISTICS:
LENGTH: 306 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
DESCRIPTION: B lymphocyte activation antigen; Ig
DESCRIPTION: superfamily member; T cell costimulatory signal
DESCRIPTION: via activation of CD28 pathways; binds to CD28+
DESCRIPTION: T cells, transmembrane protein
FEATURE:
NAME/KEY: signal sequence
LOCATION: -37 to -1
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
OTHER INFORMATION: hydrophobic
FEATURE:
NAME/KEY: extracellular domain
LOCATION: 1 to 210
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: transmembrane domain
LOCATION: 211 to 235
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: intracellular (cytoplasmic) domain
LOCATION: 236 to 269
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: Ig V-set domain

FEATURE:
  NAME/KEY: Ig C-set domain
  LOCATION: 1 to 105
  IDENTIFICATION METHOD: similarity with known sequence
  IDENTIFICATION METHOD: sequence
FEATURE:
  NAME/KEY:
  LOCATION: 106 to 199
  IDENTIFICATION METHOD: similarity with known sequence
  IDENTIFICATION METHOD: sequence
PUBLICATION INFORMATION:
  AUTHORS: FREEMAN, GORDON J.
  AUTHORS: GRAY, GARY S.
  AUTHORS: GIMMI, CLAUDE D.
  AUTHORS: LOMBARD, DAVID B.
  AUTHORS: ZHOU, LIANG-JI
  AUTHORS: WHITE, MICHAEL
  AUTHORS: FINGEROTH, JOYCE D.
  AUTHORS: GRIBBEN, JOHN G.
  AUTHORS: NADLER, LEE M.
  TITLE: Structure, Expression, and T Cell Costimulatory Activity Of The Murine Homologue Of The Human B
  TITLE: Lymphocyte Activation Antigen B7
  JOURNAL: Journal of Experimental Medicine
  VOLUME:
  ISSUE:
  PAGES:
  DATE: IN PRESS

US-08-280-757B-31
RELEVANT RESIDUES IN SEQ ID NO: 31: From -37 to 269

Query Match 11.7%; Score 177.5; DB 3; Length 306;
Best Local Similarity 26.6%; Pred. No. 3.4e-10;
Matches 57; Conservative 36; Mismatches 92; Indels 29; Gaps 11;

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Qy   55 VYWEMEDKNIIQEVHGEEDLKVQHSSYRQRARLLKDQLSLGNAALQITDVKLQODAGVYRC 114
           :|| :||:.|::..||.:.|| :..:..:|.|...:|...|...|....|..|..  ||
Db   68 IYWQKHDKVVLSVIAGK--LKV-WPEYKNRT--LYDNTTY---SLILGLVLSDRGTYSC  119

Qy  115 MI------SYGGADYKRITVKVNAPYNKINQRILVVD---PVTSEHELTCQAE-GYPKAE 164
        |:       ||..||:..|..|..:||.:|.|.|. .|.||...|.|...|...:||.|
Db  120 VVQKKERGTYGVKHLALVKLSIKADFSTPN----ITESGNPSADTKRITCFASGGFPKPR 175

Qy  165 VIWTSSDHQVLSGKTTTTNSKREEKLFNVTSTLRINTTNEIFYCTFRRLDPEENHTAEL 224
        |.|.|..:...||. .||:|.::.|||.|.|:|..| ...|..:..|..|...||:.||
Db  176 FSWLENGRE-LPGINTTISQDPESELYTISSQLDFNTTRNHTIKCLIKYGDA---HVSED 231

Qy  225 VIPELPLAHPPNERTHLVILGAILLCLGVALTFI 258
        |:|.|. .||...|...|:|||.|.|.|||.|.
Db  232 FTWEKPEDPPDSKNTLVLFGA---GFGAVITVV 262
```

RESULT 7
US-09-159-135-4
Sequence 4, Application US/09159135
Patent No. 6149905
GENERAL INFORMATION:
  APPLICANT: Ostrand-Rosenberg, Suzanne
  APPLICANT: Baskar, Sivasubramanian
  APPLICANT: Glimcher, Laurie H.
  APPLICANT: Freeman, Gordon J.
  APPLICANT: Nadler, Lee M.
  TITLE OF INVENTION: Tumor Cells with Increased Immunogenicity
  NUMBER OF SEQUENCES: 4
  CORRESPONDENCE ADDRESS:
    ADDRESSEE: LAHIVE & COCKFIELD
    STREET: 60 State Street, Suite 510
    CITY: Boston
    STATE: Massachusetts
    COUNTRY: USA
    ZIP: 02109
  COMPUTER READABLE FORM:
    MEDIUM TYPE: Floppy disk
    COMPUTER: IBM PC compatible

    OPERATING SYSTEM: PC-DOS/MS-DOS
    SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
  APPLICATION NUMBER: US/09/159,135
  FILING DATE:
  CLASSIFICATION:
PRIOR APPLICATION DATA:
  APPLICATION NUMBER: 08/147,772
  FILING DATE:
ATTORNEY/AGENT INFORMATION:
  NAME: Mandragouras, Amy E.
  REGISTRATION NUMBER: 36,207
  REFERENCE/DOCKET NUMBER: RPI-003
TELECOMMUNICATION INFORMATION:
  TELEPHONE: (617) 227-7400
  TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
  LENGTH: 306 amino acids
  TYPE: amino acid
  TOPOLOGY: linear
MOLECULE TYPE: protein
  DESCRIPTION: B lymphocyte activation antigen; Ig superfamily member; T cell costimulatory signal
  DESCRIPTION: via activation of CD28 pathways, binds to CD28+
  DESCRIPTION: T cells, transmembrane protein
FEATURE:
  NAME/KEY: signal sequence
  LOCATION: -37 to -1
  IDENTIFICATION METHOD: similarity with known sequence
  OTHER INFORMATION: hydrophobic
FEATURE:
  NAME/KEY: extracellular domain
  LOCATION: 1 to 210
  IDENTIFICATION METHOD: similarity with known sequence
FEATURE:
  NAME/KEY: transmembrane domain
  LOCATION: 211 to 235
  IDENTIFICATION METHOD: similarity with known sequence
FEATURE:
  NAME/KEY: intracellular (cytoplasmic) domain
  LOCATION: 236 to 269
  IDENTIFICATION METHOD: similarity with known sequence
FEATURE:
  NAME/KEY: Ig V-set domain
  LOCATION: 1 to 105
  IDENTIFICATION METHOD: similarity with known sequence
FEATURE:
  NAME/KEY: Ig C-set domain
  LOCATION: 106 to 199
  IDENTIFICATION METHOD: similarity with known sequence
PUBLICATION INFORMATION:
  AUTHORS: FREEMAN, GORDON J.
  AUTHORS: GRAY, GARY S.
  AUTHORS: GIMMI, CLAUDE D.
  AUTHORS: LOMBARD, DAVID B.
  AUTHORS: ZHOU, LIANG-JI
  AUTHORS: WHITE, MICHAEL
  AUTHORS: FINGEROTH, JOYCE D.
  AUTHORS: GRIBBEN, JOHN G.
  AUTHORS: NADLER, LEE M.
  TITLE: Structure, Expression, and T Cell Costimulatory Activity Of The Murine Homologue Of The Human B
  TITLE: Lymphocyte Activation Antigen B7
  JOURNAL: Journal of Experimental Medicine
  VOLUME:
  ISSUE:

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PAGES:          IN PRESS
DATE:           IN PRESS
RELEVANT RESIDUES IN SEQ ID NO: 4: From -37 to 269
US-09-159-135-4

Query Match     11.7%;   Score 177.5; DB 3;  Length 306;
Best Local Similarity   26.6%;   Pred. No. 3.4e-10;
Matches   57;   Conservative   36;   Mismatches   92;   Indels   29;   Gaps   11;

Qy   55 VYWEMEDKNIIQFVHGEEDLKVQHSSYRQRARLKDQLSIGNAALQITDVKLQDAGVYRC 114
        ||:|| ||   ||| |:   :  |  |::|| |  |  | :| |  :| ||  | |:| |
Db   68 IYWQKHDKVLSVIAGK--LKV-WPEYKNRT--LYDNTTY---SLILGLVLSDRGTYSC 119

Qy  115 MI------SYGGADYKRITVKVNAPYNKINQRILVVD---PVTSEHELTCQAE-GYPKAE 164
        ::     | |:| : | ::|| | | :| | | | |      |    |   |   | ||
Db  120 VVQKKERGTYGVKHLALVKLSIKADFSTPN---ITESGNPSADYKRITCFASGGFPKPR 175

Qy  165 VIWTSSDHQVLSGKTTTTNSREEKLFNVTSTLRINTTTNEIFYCTFRRLDPEENHTAEL 224
        ||  :::  |  |  : |||::|| | |  ||  |||  |||||  | || |:||| |
Db  176 FSWLENGRE-LPGINTTISQDPESELYTISSQLDFNTTRNHTIKCLIKYGDA---HVSED 231

Qy  225 VIPELPLAHPPNERGHLVILGAILLCLGVALTFI 258
        || | | || ||  | | :|||:| |  | | |
Db  232 FTWEKPPEDPPDSKNTLVLFGA---GFGAVITVV 262
```

```
RESULT   8
US-08-147-772-2
Sequence 2, Application US/08147772
Patent No. 5858776
GENERAL INFORMATION:
  APPLICANT:
    APPLICANT:   Ostrand-Rosenberg, Suzanne
    APPLICANT:   Baskar, Sivasubramanian
    APPLICANT:   Glincher, Laurie H.
    APPLICANT:   Freeman, Gordon J.
    APPLICANT:   Nadler, Lee M.
  TITLE OF INVENTION:   Tumor Cells With Increased Immunogenicity
  NUMBER OF SEQUENCES:   4
  CORRESPONDENCE ADDRESS:
    ADDRESSEE:   LAHIVE & COCKFIELD
    STREET:   60 State Street, Suite 510
    CITY:   Boston
    STATE:   Massachusetts
    COUNTRY:   USA
    ZIP:   02109
  COMPUTER READABLE FORM:
    MEDIUM TYPE:   Floppy disk
    COMPUTER:   IBM PC compatible
    OPERATING SYSTEM:   PC-DOS/MS-DOS
    SOFTWARE:   Patentin Release #1.0, Version #1.25
  CURRENT APPLICATION DATA:
    APPLICATION NUMBER:   US/08/147,772
    FILING DATE:
    CLASSIFICATION:   424
  PRIOR APPLICATION DATA:
    APPLICATION NUMBER:
    FILING DATE:
  ATTORNEY/AGENT INFORMATION:
    NAME:   Mandragouras, Amy E.
    REGISTRATION NUMBER:   36,207
    REFERENCE/DOCKET NUMBER:   RPI-003
  TELECOMMUNICATION INFORMATION:
    TELEPHONE:   (617) 227-7400
    TELEFAX:   (617) 227-5941
  INFORMATION FOR SEQ ID NO: 2:
    SEQUENCE CHARACTERISTICS:
      LENGTH:   288 amino acids
      TYPE:   amino acid
      TOPOLOGY:   linear
    MOLECULE TYPE:   protein
    DESCRIPTION:   B cell activation antigen; natural ligand
    DESCRIPTION:   for CD28 T cell surface antigen; transmembrane protein
```

```
FEATURE:
  NAME/KEY:   signal sequence
  LOCATION:   -34 to -1
  IDENTIFICATION METHOD:   amino terminal sequencing of
  IDENTIFICATION METHOD:   soluble protein
  OTHER INFORMATION:   hydrophobic
FEATURE:
  NAME/KEY:   extracellular domain
  LOCATION:   1 to 208
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   transmembrane domain
  LOCATION:   209 to 235
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   intracellular domain
  LOCATION:   236 to 254
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   N-linked glycosylation
  LOCATION:   19 to 21
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   N-linked glycosylation
  LOCATION:   55 to 57
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   N-linked glycosylation
  LOCATION:   64 to 66
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   N-linked glycosylation
  LOCATION:   152 to 154
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   N-linked glycosylation
  LOCATION:   173 to 175
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   N-linked glycosylation
  LOCATION:   177 to 179
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   N-linked glycosylation
  LOCATION:   192 to 194
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   N-linked glycosylation
  LOCATION:   198 to 200
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   Ig V-set domain
  LOCATION:   1 to 104
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
FEATURE:
  NAME/KEY:   Ig C-set domain
  LOCATION:   105 to 202
  IDENTIFICATION METHOD:   similarity with known
  IDENTIFICATION METHOD:   sequence
PUBLICATION INFORMATION:
  AUTHORS:   FREEMAN, GORDON J.
```

Left column

AUTHORS: FREEDMAN, ARNOLD S.
AUTHORS: SEGIL, JEFFREY M.
AUTHORS: LEE, GRACE
AUTHORS: WHITMAN, JAMES F.
AUTHORS: NADLER, LEE M.
TITLE: B7, A New Member Of The Ig Superfamily With
       Unique Expression On Activated And Neoplastic B Cells
JOURNAL: The Journal of Immunology
DATE: 15-OCT-1989
VOLUME: 143
ISSUE: 8
PAGES: 2714-2722
US-08-147-772-2
RELEVANT RESIDUES IN SEQ ID NO: 2: From -26 to 262

Query Match   11.4%; Score 172; DB 2; Length 288;
Best Local Similarity   22.1%; Pred. No. 1.1e-09;
Matches 58; Conservative 56; Mismatches 97; Indels 52; Gaps 12;

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Qy   25 KDLYVEYGSNMTIECKFPVEKQLDLAALIVYWEMEDKNIIQFVHGEEDLKVQHSSYRQR  84
         |:|  :|:|:|        ||  |   |||||  | | :   ||: |
Db   43 KEVATLSCGHNVSVE--------ELAQTRIYWQKEKKMVLTMMSGDMNIWPEYKN----  89

Qy   85 ARLLKDQLSLGNAALQITDVKLQDAGVYRCMI-SYGGADYKR------ITVKVNAPYNK 136
         | |      |||| | |  | |   :|| ||   | |           |||| |||||
Db   90 -RTIFD--ITNNLSIVILALRPSDEGTYECVVLKYEKDAFKREHLAEVTLSVKADFPTPS 146

Qy  137 INQRILVVDPVTSEHELTCQAE-GYPKAEVIWTSSDHQVLSGKTTTTNSKREEKLFNVTS 195
         |:|      : | ||| |  |  ||  | || |   ||| |||:|||:   ||| |||:
Db  147 ISDFEI--PTSNIRRIICSTSGGFPEPHLSWLENGEE-LNAINTTVSQDPETELYAVSS  202

Qy  196 TLRINTTTNEIFYC-----------TFRRLDPEENHTAELVIPELPLAHPPNERTHLVIL 244
         ||||||| ||||               |||  |||:||| :|| |  |   |: |:|
Db  203 KLDFNMTTNHSFMCLIKYGHLRVNQTFNWNTTKQEHFPDNLLPSWAI------TLISVN  255

Qy  245 GAILLCLGVALTFIF--RLRKGR 265
         |:|| |||| | |||    | |
Db  256 GIFVIC---CLTYCFAPRCRERR 275
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RESULT 9
US-08-456-104-6
Sequence 6, Application US/08456104
Patent No. 5861310
GENERAL INFORMATION:
 APPLICANT: Freeman, Gordon J.
 APPLICANT: Nadler, Lee M.
 APPLICANT: Gray, Gary S.
 TITLE OF INVENTION: TUMOR CELLS MODIFIED TO EXPRESS B7-2 AND B7-3 WITH INCREASED
 NUMBER OF SEQUENCES: 8
 CORRESPONDENCE ADDRESS:
  ADDRESSEE: LAHIVE & COCKFIELD
  STREET: 60 State Street, Suite 510
  CITY: Boston
  STATE: Massachusetts
  COUNTRY: USA
  ZIP: 02109
 COMPUTER READABLE FORM:
  MEDIUM TYPE: Floppy disk
  COMPUTER: IBM PC compatible
  OPERATING SYSTEM: PC-DOS/MS-DOS
  SOFTWARE: PatentIn Release #1.0, Version #1.25
 CURRENT APPLICATION DATA:
  APPLICATION NUMBER: US/08/456,104
  FILING DATE:
 PRIOR APPLICATION DATA:
  CLASSIFICATION: 424
  APPLICATION NUMBER: 08/101,624;
  FILING DATE: 26-JUL-1993;
  APPLICATION NUMBER: 08/109,393;
  FILING DATE: 19-AUG-1993
 ATTORNEY/AGENT INFORMATION:

Right column

NAME: Mandragouras, Amy E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: RPI-008
TELECOMMUNICATION INFORMATION:
 TELEPHONE: (617) 227-7400
 TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 6:
 SEQUENCE CHARACTERISTICS:
  LENGTH: 288 amino acids
  TYPE: amino acid
  TOPOLOGY: linear
 MOLECULE TYPE: protein
US-08-456-104-6

Query Match   11.4%; Score 172; DB 2; Length 288;
Best Local Similarity   22.1%; Pred. No. 1.1e-09;
Matches 58; Conservative 56; Mismatches 97; Indels 52; Gaps 12;

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Qy   25 KDLYVEYGSNMTIECKFPVEKQLDLAALIVYWEMEDKNIIQFVHGEEDLKVQHSSYRQR  84
         |:|  :|:|:|        ||  |   |||||  | | :   ||: |
Db   43 KEVATLSCGHNVSVE--------ELAQTRIYWQKEKKMVLTMMSGDMNIWPEYKN----  89

Qy   85 ARLLKDQLSLGNAALQITDVKLQDAGVYRCMI-SYGGADYKR------ITVKVNAPYNK 136
         | |      |||| | |  | |   :|| ||   | |           |||| |||||
Db   90 -RTIFD--ITNNLSIVILALRPSDEGTYECVVLKYEKDAFKREHLAEVTLSVKADFPTPS 146

Qy  137 INQRILVVDPVTSEHELTCQAE-GYPKAEVIWTSSDHQVLSGKTTTTNSKREEKLFNVTS 195
         |:|      : | ||| |  |  ||  | || |   ||| |||:|||:   ||| |||:
Db  147 ISDFEI--PTSNIRRIICSTSGGFPEPHLSWLENGEE-LNAINTTVSQDPETELYAVSS  202

Qy  196 TLRINTTTNEIFYC-----------TFRRLDPEENHTAELVIPELPLAHPPNERTHLVIL 244
         ||||||| ||||               |||  |||:||| :|| |  |   |: |:|
Db  203 KLDFNMTTNHSFMCLIKYGHLRVNQTFNWNTTKQEHFPDNLLPSWAI------TLISVN  255

Qy  245 GAILLCLGVALTFIF--RLRKGR 265
         |:|| |||| | |||    | |
Db  256 GIFVIC---CLTYCFAPRCRERR 275
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RESULT 10
US-08-101-624-23
Sequence 23, Application US/08101624
Patent No. 5942607
GENERAL INFORMATION:
 APPLICANT: Freeman, Gordon J.
 APPLICANT: Nadler, Lee M.
 APPLICANT: Gray, Gary S.
 TITLE OF INVENTION: No. 5942607el CTLA4/CD28 Ligands and
                     Uses Therefor
 NUMBER OF SEQUENCES: 25
 CORRESPONDENCE ADDRESS:
  ADDRESSEE: LAHIVE & COCKFIELD
  STREET: 60 State Street, Suite 510
  CITY: Boston
  STATE: Massachusetts
  COUNTRY: USA
  ZIP: 02109
 COMPUTER READABLE FORM:
  MEDIUM TYPE: Floppy disk
  COMPUTER: IBM PC compatible
  OPERATING SYSTEM: PC-DOS/MS-DOS
  SOFTWARE: PatentIn Release #1.0, Version #1.25
 CURRENT APPLICATION DATA:
  APPLICATION NUMBER: US/08/101,624
  FILING DATE: 26-JUL-1993
 PRIOR APPLICATION DATA:
  CLASSIFICATION: 514
  APPLICATION NUMBER:
  FILING DATE:
 ATTORNEY/AGENT INFORMATION:
  NAME: Mandragouras, Amy E.
  REGISTRATION NUMBER: 36,207

REFERENCE/DOCKET NUMBER: RPI-004
TELECOMMUNICATION INFORMATION:
  TELEPHONE: (617) 227-7400
  TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 23:
  SEQUENCE CHARACTERISTICS:
    LENGTH: 288 amino acids
    TYPE: amino acid
    TOPOLOGY: linear
  MOLECULE TYPE: protein
  DESCRIPTION: B cell activation antigen; natural ligand
    for CD28 T cell surface antigen; transmembrane protein
  OTHER INFORMATION: hydrophobic
  IDENTIFICATION METHOD: soluble protein
  IDENTIFICATION METHOD: amino terminal sequencing of
  DESCRIPTION: B cell activation antigen; natural ligand
  FEATURE:
    NAME/KEY: signal sequence
    LOCATION: -34 to -1
    IDENTIFICATION METHOD: similarity with known
  FEATURE:
    NAME/KEY: extracellular domain
    LOCATION: 1 to 208
    IDENTIFICATION METHOD: sequence
  FEATURE:
    NAME/KEY: transmembrane domain
    LOCATION: 209 to 235
    IDENTIFICATION METHOD: similarity with known
  FEATURE:
    NAME/KEY: intracellular domain
    LOCATION: 236 to 254
    IDENTIFICATION METHOD: sequence
  FEATURE:
    NAME/KEY: N-linked glycosylation
    LOCATION: 19 to 21
    IDENTIFICATION METHOD: similarity with known
  FEATURE:
    NAME/KEY: N-linked glycosylation
    LOCATION: 55 to 57
    IDENTIFICATION METHOD: sequence
  FEATURE:
    NAME/KEY: N-linked glycosylation
    LOCATION: 64 to 66
    IDENTIFICATION METHOD: sequence
  FEATURE:
    NAME/KEY: N-linked glycosylation
    LOCATION: 152 to 154
    IDENTIFICATION METHOD: sequence
  FEATURE:
    NAME/KEY: N-linked glycosylation
    LOCATION: 173 to 175
    IDENTIFICATION METHOD: sequence
  FEATURE:
    NAME/KEY: N-linked glycosylation
    LOCATION: 177 to 179
    IDENTIFICATION METHOD: similarity with known
  FEATURE:
    NAME/KEY: N-linked glycosylation
    LOCATION: 192 to 194
    IDENTIFICATION METHOD: sequence
  FEATURE:
    NAME/KEY: N-linked glycosylation
    LOCATION: 198 to 200
    IDENTIFICATION METHOD: similarity with known

  FEATURE:
    NAME/KEY: Ig V-set domain
    LOCATION: 1 to 104
    IDENTIFICATION METHOD: similarity with known
    IDENTIFICATION METHOD: sequence
  FEATURE:
    NAME/KEY: Ig C-set domain
    LOCATION: 105 to 202
    IDENTIFICATION METHOD: similarity with known
    IDENTIFICATION METHOD: sequence
PUBLICATION INFORMATION:
  AUTHORS: FREEMAN, GORDON J.
  AUTHORS: FREEDMAN, ARNOLD S.
  AUTHORS: SEGIL, JEFFREY M.
  AUTHORS: LEE, GRACE
  AUTHORS: WHITMAN, JAMES F.
  AUTHORS: NADLER, LEE M.
  TITLE: B7, A New Member Of The Ig Superfamily with
  TITLE: Unique Expression On Activated And Neoplastic B cells
  JOURNAL: The Journal of Immunology
  VOLUME: 143
  ISSUE: 8
  PAGES: 2714-2722
  DATE: 15-OCT-1989
  RELEVANT RESIDUES IN SEQ ID NO: 23: From -26 to 262

US-08-101-624-23

RESULT 11
US-08-751-767A-6
; Sequence 6, Application US/0875176A
; Patent No. 5994104
; GENERAL INFORMATION:
;   APPLICANT: ANDERSON, ROBERT J.
;   APPLICANT: GRANT, HUGH
;   APPLICANT: MACDONALD, IAN D.
;   TITLE OF INVENTION: INTERLUKIN-12 FUSION PROTEIN
;   NUMBER OF SEQUENCES: 80
;   CORRESPONDENCE ADDRESS:
;   ADDRESSEE: NIXON & VANDERHYE P.C.
;   STREET: 1100 NORTH GLEBE ROAD
;   CITY: ARLINGTON
;   STATE: VA
;   COUNTRY: USA
;   ZIP: 22201
; COMPUTER READABLE FORM:
;   MEDIUM TYPE: Floppy disk
;   COMPUTER: IBM PC compatible

Query Match   11.4%; Score 172; DB 2; Length 288;
Best Local Similarity   22.1%; Pred. No. 1.1e-09;
Matches   58; Conservative   56; Mismatches   97; Indels   52; Gaps   12;

Qy   25 KDLIVVEYGSNMTIECKFPVEKQLDLAALIVYWEMEDKNIIQFVHGEEDLKVQHSSYROH   84
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Db   43 KEVATLSCGHNVSVE-----------ELAQTRIYWQKEKKMVLTMMSGDMNIWPEYKN---   89

Qy   85 ARLLKDQLSLGNAALQITDVKLQDAGVYRCMI-SYGGADYKR------ITTVYNAPYN-   136
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Db   90 -RTIFD--ITNNLSIVILALRPSDEGTYECVVLKYEKDAFKREHLAEVTLSVKADEPTPS   146

Qy   137 INQRILVVDPVTSEHELTCQAE-GYPKAEVITWTSSDHQVLSGKTTTTNSKREEKLFNVTS   195
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Db   147 ISDFEI---PTSNIRRIICSTSGGFPEPHLSWLENGEE-LNAINTTVSQDPETELYAVSS   202

Qy   196 TLRINTTTNEIFYC-------------TFRRLDPEENITAELVIPELPLAHPPNERTHLVIT   244
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Db   203 KLDFNMTTNHSFMCLIKYGHLRVNQTFNWNTTKQEHFPDNLLPSWAI------TLISVN   255

Qy   245 GAILLCLGVALTFIF--RLRKGR   265
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Db   256 GIFVIC---CLIYCFAPRCRERR   275

OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/751,767A
FILING DATE: 08-NOV-1996
CLASSIFICATION: 536
ATTORNEY/AGENT INFORMATION:
NAME: SADOFF, B.J.
REGISTRATION NUMBER: 36,663
REFERENCE/DOCKET NUMBER: 117-221
TELECOMMUNICATION INFORMATION:
TELEPHONE: 7038164100
TELEFAX: 7038164091
INFORMATION FOR SEQ ID NO: 6:
SEQUENCE CHARACTERISTICS:
LENGTH: 288 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-751-767A-6

Query Match

Best Local Similarity   11.48%;   Score 172;   DB 2;   Length 288;
Matches 58; Conservative 56; Mismatches 97; Indels 52; Gaps 12;

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Qy   25 KDLYVEYGSNMTIECKFPVEKQLDLAALIVYWEMEDKNIIQFVHGEEDLKVQHSSYRQR  84
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Db   43 KEVATLSCGHNVSVE-------ELAQTRIYWQKEKKWVLTMMSGDMNIWPEYKN----  89

Qy   85 ARLLKDQLSLGNAALQITDVKLQODAGVYRCMI-SYGGADYKR------ITVKVNAPYNK 136
         :|:|      |: ||   :||:   :|||      :|| |      ::||  | |
Db   90 -RTIFD--ITNNLSIVILALRPSDEGTYECVVLKYEKDAFKREHLAEVTLSVKADPPTPS 146

Qy  137 INQRILVVDPVTSEHELTCQAE-QYPKAEVIWTSSDHQVLSGKTTTTNSKREEKLFNVTS 195
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Db  147 ISDFEI--PTSNIRRICSTSGGFPEPHLSWLENGEE-LNAINTTVSQDPETELYAVSS  202

Qy  196 TLRINTTTINEIFYC----------TFRRLDPEENHTAELIVIPELPLAHPPNERTHLVIL 244
         || :|||  | :          |::     ::    |:|  : :     :
Db  203 KLDFNMTTNHSFMCLIKYGHLRVNQTFNWNTTKQEHFPDNLLPSWAI------TLISVN  255

Qy  245 GAILLCLGVALTFIF--RLRKGR 265
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Db  256 GIFVIC---CLIYCFAPRCRERR 275
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RESULT 12
US-08-153-262-2
Sequence 2, Application US/08153262
Patent No. 6071716
GENERAL INFORMATION:
APPLICANT: FREEMAN, GORDON J.
APPLICANT: FREEMAN, ARNOLD S.
APPLICANT: NADLER, LEE M.
TITLE OF INVENTION: DNA Encoding B7, A New Member
TITLE OF INVENTION: Of The IgG Superfamily With Unique Expression On
TITLE OF INVENTION: Activated And Neoplastic B Cells.
NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
ADDRESSEE: The Dana-Farber Cancer Institute
STREET: 44 Binney Street
CITY: Boston
STATE: Massachusetts
COUNTRY: U.S.A.
ZIP: 02115
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 3.50 inch, 720kb storage
COMPUTER: IBM Personal System 2; Model 30
OPERATING SYSTEM: MS/DOS
SOFTWARE: WordPerfect 5.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/153,262

FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/751,306
FILING DATE: 28-AUG-1991
ATTORNEY/AGENT INFORMATION:
NAME: HART, JULIA D.
REGISTRATION NUMBER: 33132
REFERENCE/DOCKET NUMBER: DFCI-116.1
TELECOMMUNICATION INFORMATION:
TELEPHONE: (203) 255-8900
TELEFAX: (203) 259-2846
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 288 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
DESCRIPTION: B cell activation antigen; natural ligand
DESCRIPTION: for CD28 T cell surface antigen; transmembrane protein
FEATURE:
NAME/KEY: signal sequence
LOCATION: -34 to -1
IDENTIFICATION METHOD: amino terminal sequencing of
IDENTIFICATION METHOD: soluble protein
OTHER INFORMATION: hydrophobic
FEATURE:
NAME/KEY: extracellular domain
LOCATION: 1 to 208
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: transmembrane domain
LOCATION: 209 to 235
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: intracellular domain
LOCATION: 236 to 254
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 19 to 21
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 55 to 57
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 64 to 66
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 152 to 154
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 173 to 175
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 177 to 179
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: N-linked glycosylation

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        LOCATION: 192 to 194
        IDENTIFICATION METHOD: similarity with known
    FEATURE:
        NAME/KEY: N-linked glycosylation
        IDENTIFICATION METHOD: sequence
        LOCATION: 198 to 200
        IDENTIFICATION METHOD: sequence
    FEATURE:
        NAME/KEY: Ig C-set domain
        LOCATION: 105 to 202
        IDENTIFICATION METHOD: similarity with known
        LOCATION: 1 to 104
        IDENTIFICATION METHOD: similarity with known
    FEATURE:
        NAME/KEY: Ig V-set domain
        IDENTIFICATION METHOD: sequence
    PUBLICATION INFORMATION:
        AUTHORS: FREEMAN, GORDON J.
        AUTHORS: FREEDMAN, ARNOLD S.
        AUTHORS: SEGIL, JEFFREY M.
        AUTHORS: LEE, GRACE
        AUTHORS: WHITMAN, JAMES F.
        AUTHORS: NADLER, LEE M.
        TITLE: B7, A New Member Of The Ig Superfamily With
        TITLE: Unique Expression On Activated And Neoplastic B Cells
        JOURNAL: The Journal of Immunology
        VOLUME: 143
        ISSUE: 8
        PAGES: 2714-2722
        DATE: 15-OCT-1989
        RELEVANT RESIDUES IN SEQ ID NO:  2: From -26 to 262
US-08-153-262-2


Query Match
Best Local Similarity    11.4%;     Score 172;  DB 3;  Length 288;
                         22.1%;   Pred. No. 1.1e-09;
Conservative   56; Mismatches  97; Indels  52;  Gaps  12;
Matches  58;

Qy   25 KDLYVVEYGSNMTECKFPVEKQLDLAALIVWEMEDKNIIQFVHGEEDLKVQHSSYRQR 84
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Db   43 KEVATLSCGHNVSVE------ELAQTRIYWQKEKKMVLTMMSGDMNIWPEYKN----  89

Qy   85 ARLLKDQLSLGNAALQITFDVKLQDAGVYRCMI-SYGGADYKR------ITVKVNAPYNK 136
         | :|  :  |     :|  || | |||| || :  |||:| |          ||::||
Db   90 -RTIFD--ITNNLSIVILALRPSDEGTYECVVLKYEKDAFKREHLAEVTLSVKADPFTPS 146

Qy  137 INQRILVVDPVTSEHELTCQAE-GYPRAEVIWTSSDHQVLSGKTYTTTNSKREEKLFNVTS 195
          : :  :  |||:|||:||  |   ||||:||:|:  :|::|  |::|||  ::|:
Db  147 ISDFEI--PTSNIRRICSTSGGPFEPHLSWLENGEE-LNAINTTVSQDPETELIYAVSS 202

Qy  196 TLRINTTTNEIFYC---------------TFRRLDPEENHTAELVIPELPLAHPPNERTHLVIL 244
         || :| |:| :|                  | :| |:| |||||
Db  203 KLDFNMTTNHSFMCLIKYGHLRVNQTFNWNTIKQEHFPDNLLPSWAI-------TLISVN 255

Qy  245 GAILLCLGVALTFIF--RLRKGR 265
          || :| |  | :    | :|
Db  256 GIFVIC---CLTYCFAPRCRERR 275


RESULT 13
US-08-479-744A-29
Sequence 29, Application US/08479744A
Patent No. 6084067
GENERAL INFORMATION:
    APPLICANT: Freeman, Gordon J.
    APPLICANT: Nadler, Lee M.
    APPLICANT: Gray, Gary S.
    TITLE OF INVENTION: No. 6084067el CTLA4/CD28 Ligands and
    TITLE OF INVENTION: Uses Therefor
    NUMBER OF SEQUENCES: 55
    CORRESPONDENCE ADDRESS:
```

```
        ADDRESSEE: LAHIVE & COCKFIELD, LLP
        STREET: 60 State Street
        CITY: Boston
        STATE: Massachusetts
        COUNTRY: USA
        ZIP: 02109
    COMPUTER READABLE FORM:
        MEDIUM TYPE: Floppy disk
        COMPUTER: IBM PC compatible
        OPERATING SYSTEM: PC-DOS/MS-DOS
        SOFTWARE: PatentIn Release #1.0, Version #1.25
    CURRENT APPLICATION DATA:
        APPLICATION NUMBER: US/08/479,744A
        FILING DATE: June 7, 1995
        CLASSIFICATION: 435
    PRIOR APPLICATION DATA:
        APPLICATION NUMBER: 08/280,757
        FILING DATE: 26-JUL-1994
        APPLICATION NUMBER: 08/109,393
        FILING DATE: 28-AUG-1993
        APPLICATION NUMBER: 08/101,624
        FILING DATE: 26-JULY-1993
        APPLICATION NUMBER: 08/147,773
        FILING DATE: 3-NOV-1993
    ATTORNEY/AGENT INFORMATION:
        NAME: Mandragouras, Amy E.
        REGISTRATION NUMBER: 36,207
        REFERENCE/DOCKET NUMBER: RPI-004CP3
    TELECOMMUNICATION INFORMATION:
        TELEPHONE: (617) 227-7400
        TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 29:
    SEQUENCE CHARACTERISTICS:
        LENGTH: 288 amino acids
        TYPE: amino acid
        TOPOLOGY: linear
    MOLECULE TYPE: protein
        DESCRIPTION: B cell activation antigen; natural ligand
        DESCRIPTION: for CD28 T cell surface antigen; transmembrane protein
    FEATURE:
        NAME/KEY: signal sequence
        LOCATION: -34 to -1
        IDENTIFICATION METHOD: amino terminal sequencing of
        IDENTIFICATION METHOD: soluble protein
        OTHER INFORMATION: hydrophobic
    FEATURE:
        NAME/KEY: extracellular domain
        LOCATION: 1 to 208
        IDENTIFICATION METHOD: similarity with known
    FEATURE:
        NAME/KEY: transmembrane domain
        LOCATION: 209 to 235
        IDENTIFICATION METHOD: sequence
    FEATURE:
        NAME/KEY: intracellular domain
        LOCATION: 236 to 254
        IDENTIFICATION METHOD: sequence
    FEATURE:
        NAME/KEY: N-linked glycosylation
        LOCATION: 19 to 21
        IDENTIFICATION METHOD: similarity with known
        IDENTIFICATION METHOD: sequence
    FEATURE:
        NAME/KEY: N-linked glycosylation
        LOCATION: 55 to 57
        IDENTIFICATION METHOD: similarity with known
        IDENTIFICATION METHOD: sequence
    FEATURE:
        NAME/KEY: N-linked glycosylation
        LOCATION: 64 to 66
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RESULT 14
US-08-280-757B-29
; Sequence 29, Application US/08280757B
; Patent No. 6130316
; GENERAL INFORMATION:
;   APPLICANT:  Freeman, Gordon J.
;   APPLICANT:  Nadler, Lee M.
;   APPLICANT:  Gray, Gary S.
;   APPLICANT:  Greenfield, Edward
;   TITLE OF INVENTION:  No. 6130316e1 CTLA4/CD28 Ligands and
;   TITLE OF INVENTION:  Uses Therefor
;   NUMBER OF SEQUENCES:  53
;   CORRESPONDENCE ADDRESS:
;   ADDRESSEE:  LAHIVE & COCKFIELD
;   STREET:  60 State Street, Suite 510
;   CITY:  Boston
;   STATE:  Massachusetts
;   COUNTRY:  USA
;   ZIP:  02109
; COMPUTER READABLE FORM:
;   MEDIUM TYPE:  Floppy disk
;   COMPUTER:  IBM PC compatible
;   OPERATING SYSTEM:  PC-DOS/MS-DOS
;   SOFTWARE:  PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
;   APPLICATION NUMBER:  US/08/280,757B
;   FILING DATE:  26-JUL-1994
;   CLASSIFICATION:  435
; PRIOR APPLICATION DATA:
;   APPLICATION NUMBER:  08/101,624
;   FILING DATE:  26-JULY-1993
;   APPLICATION NUMBER:  08/109,393
;   FILING DATE:  19-AUG-1993
;   APPLICATION NUMBER:  08/147,773
;   FILING DATE:  3-NOV-1993
; ATTORNEY/AGENT INFORMATION:
;   NAME:  Mandragouras, Amy E.
;   REGISTRATION NUMBER:  36,207
;   REFERENCE/DOCKET NUMBER:  RPI-004CP2
; TELECOMMUNICATION INFORMATION:
;   TELEPHONE:  (617) 227-7400
;   TELEFAX:  (617) 227-5941
; INFORMATION FOR SEQ ID NO:  29:
;   SEQUENCE CHARACTERISTICS:
;   LENGTH:  288 amino acids
;   TYPE:  amino acid
;   TOPOLOGY:  linear
;   MOLECULE TYPE:  protein
;   DESCRIPTION:  B cell activation antigen; natural ligand
;   DESCRIPTION:  for CD28 T cell surface antigen; transmembrane protein
;   FEATURE:
;   NAME/KEY:  signal sequence
;   LOCATION:  -34 to -1
;   IDENTIFICATION METHOD:  amino terminal sequencing of
;   IDENTIFICATION METHOD:  soluble protein
;   OTHER INFORMATION:  hydrophobic
;   FEATURE:
;   NAME/KEY:  extracellular domain
;   LOCATION:  1 to 208
;   IDENTIFICATION METHOD:  similarity with known
;   FEATURE:
;   NAME/KEY:  transmembrane domain
;   LOCATION:  209 to 235
;   IDENTIFICATION METHOD:  sequence
;   FEATURE:
;   IDENTIFICATION METHOD:  similarity with known
;   FEATURE:
;   NAME/KEY:  N-linked glycosylation
;   LOCATION:  152 to 154
;   IDENTIFICATION METHOD:  sequence
;   FEATURE:
;   NAME/KEY:  N-linked glycosylation
;   LOCATION:  173 to 175
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;   NAME/KEY:  N-linked glycosylation
;   LOCATION:  177 to 179
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;   NAME/KEY:  N-linked glycosylation
;   LOCATION:  192 to 194
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;   FEATURE:
;   NAME/KEY:  N-linked glycosylation
;   LOCATION:  198 to 200
;   IDENTIFICATION METHOD:  sequence
;   FEATURE:
;   NAME/KEY:  Ig V-set domain
;   LOCATION:  1 to 104
;   IDENTIFICATION METHOD:  sequence
;   FEATURE:
;   NAME/KEY:  Ig C-set domain
;   LOCATION:  105 to 202
;   IDENTIFICATION METHOD:  sequence
; PUBLICATION INFORMATION:
;   AUTHORS:  FREEMAN, GORDON J.
;   AUTHORS:  FREEDMAN, ARNOLD S.
;   AUTHORS:  SEGIL, JEFFREY M.
;   AUTHORS:  LEE, GRACE
;   AUTHORS:  WHITMAN, JAMES F.
;   AUTHORS:  NADLER, LEE M.
;   TITLE:  B7, A New Member Of The Ig Superfamily With
;   TITLE:  Unique Expression On Activated And Neoplastic B Cells
;   JOURNAL:  The Journal of Immunology
;   VOLUME:  143
;   ISSUE:  8
;   PAGES:  2714-2722
;   DATE:  15-OCT-1989
; RELEVANT RESIDUES IN SEQ ID NO:  29:  From -26 to 262
US-08-479-744A-29
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Query Match    11.4%;  Score 172;  DB 3;  Length 288;
Best Local Similarity    22.1%;  Pred. No. 1.1e-09;
Matches  58;  Conservative  56;  Mismatches  97;  Indels  52;  Gaps  12;

Qy    25  KDLIVVEYGSNMTIECKFPVEKQLDLAALIVYWEMEDKNIIQFVHGEEDLKVQHSSYRQR   84
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Db    43  KEVATLSCGHNVSVE------ELAQTRIYWQKEKKMVLTMMSGDMNIWPEYKN-----   89

Qy    85  ARLLKDQLSLGNAALQITDVKLQDAGVYRCMI-SYGGADYKR------ITVKVNAPYNK  136
          ||:  :|    | |:    |  ||:||||  :  |            ::  |||
Db    90  -RTIFD--ITNNLSIVILALRPSDEGTYECVVLKYEKDAFKREHLAEVTLSVKADFPTPS  146

Qy   137  INQRLLVVDPVTSEHELTCQAE-GYPKAEVIWTSSDHQVLSGKTTTTNSKREEKLFNVTS  195
          |:  | :  |: | | | :|   | ||  :||        |  ::|
Db   147  ISDFEI---PTSNIRRICSTSGGFPEPHLSWLENGEE-LNAINTTVSQDPETELYAVSS   202

Qy   196  TLRINTTTNEIFYC-------------------TFRLDPEENHTAELVIPELPLAHPPNERTHLVIL  244
          ||   | |||| |         |      | ::|
Db   203  KLDPNMTNHSFMCLIKYGHLRVNQTFNWNTTKQEHFPDNLLPSWAI---------TLISVN   255

Qy   245  GAILLCLGVALTFIF--RLRKGR  265
          | :||  |:::|:
Db   256  GIFVIC---CLIYCFAPRCRERR  275
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FEATURE:
NAME/KEY: intracellular domain
LOCATION: 236 to 254
IDENTIFICATION METHOD: similarity with known

FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 19 to 21
IDENTIFICATION METHOD: sequence

FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 55 to 57
IDENTIFICATION METHOD: sequence

FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 64 to 66
IDENTIFICATION METHOD: sequence

FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 152 to 154
IDENTIFICATION METHOD: sequence

FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 173 to 175
IDENTIFICATION METHOD: sequence

FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 177 to 179
IDENTIFICATION METHOD: sequence

FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 192 to 194
IDENTIFICATION METHOD: sequence

FEATURE:
NAME/KEY: N-linked glycosylation
LOCATION: 198 to 200
IDENTIFICATION METHOD: sequence

FEATURE:
NAME/KEY: Ig V-set domain
LOCATION: 1 to 104
IDENTIFICATION METHOD: similarity with known

FEATURE:
NAME/KEY: Ig C-set domain
LOCATION: 105 to 202
IDENTIFICATION METHOD: similarity with known

PUBLICATION INFORMATION:
AUTHORS: FREEMAN, GORDON J.
AUTHORS: FREEDMAN, ARNOLD S.
AUTHORS: SEGIL, JEFFREY M.
AUTHORS: LEE, GRACE
AUTHORS: WHITMAN, JAMES F.
AUTHORS: NADLER, LEE M.
TITLE: B7, A New Member Of The Ig Superfamily With
TITLE: Unique Expression On Activated And Neoplastic B Cells
JOURNAL: The Journal of Immunology
VOLUME: 143
ISSUE: 8
PAGES: 2714-2722
DATE: 15-OCT-1989
RELEVANT RESIDUES IN SEQ ID NO: 29: From -26 to 262
US-08-280-757B-29

RESULT 15
US-09-159-135-2
Sequence 2, Application US/09159135
Patent No. 6149905
GENERAL INFORMATION:
APPLICANT: Ostrand-Rosenberg, Suzanne
APPLICANT: Baskar, Sivasubramanian
APPLICANT: Glimcher, Laurie H.
APPLICANT: Freeman, Gordon J.
APPLICANT: Nadler, Lee M.
TITLE OF INVENTION: Tumor Cells With Increased Immunogenicity
NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 60 State Street, Suite 510
CITY: Boston
STATE: Massachusetts
COUNTRY: USA
ZIP: 02109
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/159,135
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/147,772
FILING DATE:
ATTORNEY/AGENT INFORMATION:
NAME: Mandragouras, Amy E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: RPI-003
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 227-7400
TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 288 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
DESCRIPTION: B cell activation antigen; natural ligand
DESCRIPTION: for CD28 T cell surface antigen; transmembrane protein
FEATURE:
NAME/KEY: signal sequence

Query Match 58%; Score 172; DB 3; Length 288;
Best Local Similarity 22.1%; Pred. No. 1.1e-09;
Matches 58; Conservative 56; Mismatches 97; Indels 52; Gaps 12;

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Qy   25 KDLYVVEYGSNMTIECKFPVEKQLDLAALIVYWEMEDKNIIQFVHGEEDLKVQHSSYRQR  84
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Db   43 KEVATLSCGHNVSVE---------------ELAQTRIYWQKEKKMVLTMMSGDMNIWPEYKN  89

Qy   85 ARILKDQLSLGNAALQITDVKIQDAGVYRCMI-SYGGADYKR------ITVKVNAPYNK  136
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Db   90 -RTIFD--ITNNLSIVILALRPSDEGTYECVVLKYEKDAFKREHLAEVTLSVKADFPPTPS  146

Qy  137 INQRILVVDPVTSEHELTCQAE-GYPKAEVIWTSSDHQVLSGKTTTTNSKREEKLFNVTS  195
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Db  147 ISDFEI---PTSNIRRIICSTSGGFPEPHLSWLENGEE-LNAINTIVSQDPETELYAVSS  202

Qy  196 TLRINTTTNEIFYC-----------TFRRLDPEENHTAELVIPELPLAHPNERTHLVIL  244
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Db  203 KLDFNMTTNHSFMCLIRKYGHLRVNQTFNWNTTKQEHFPDNLLPSWAI------TLISVN  255

Qy  245 GAILLCLGVALTFIF--RLRKGR  265
           | | |:||  || |:   : |
Db  256 GIFVIC---CLTYCFAPRCRERR  275
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                         LOCATION: -34 to -1
                         IDENTIFICATION METHOD:  amino terminal sequencing of
                         OTHER INFORMATION: hydrophobic
                                            soluble protein
FEATURE:
         NAME/KEY:       extracellular domain
         LOCATION:       1 to 208
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       transmembrane domain
         LOCATION:       209 to 235
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       intracellular domain
         LOCATION:       236 to 254
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       N-linked glycosylation
         LOCATION:       19 to 21
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       N-linked glycosylation
         LOCATION:       55 to 57
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       N-linked glycosylation
         LOCATION:       64 to 66
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       N-linked glycosylation
         LOCATION:       152 to 154
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       N-linked glycosylation
         LOCATION:       173 to 175
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       N-linked glycosylation
         LOCATION:       177 to 179
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       N-linked glycosylation
         LOCATION:       192 to 194
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       N-linked glycosylation
         LOCATION:       198 to 200
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       Ig V-set domain
         LOCATION:       1 to 104
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
FEATURE:
         NAME/KEY:       Ig C-set domain
         LOCATION:       105 to 202
         IDENTIFICATION METHOD:  similarity with known
         IDENTIFICATION METHOD:  sequence
PUBLICATION INFORMATION:
         AUTHORS:  FREEMAN, GORDON J.
         AUTHORS:  FREEDMAN, ARNOLD S.
         AUTHORS:  SEGIL, JEFFREY M.
```

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US-09-159-135-2

Query Match       11.4%;   Score 172;   DB 3;   Length 288;
Best Local Similarity   22.1%;   Pred. No. 1.1e-09;
  Matches   58;  Conservative   56;  Mismatches   97;  Indels   52;  Gaps   12;

Qy   25 KDLIYVEYGSNMTIECKFPVEKQLDLAALIVYWEMEDKNIIQFVHGEEDLKVQH         84
         |:|::|             |  |::||   |   |:|
Db   43 KEVATLSCGHNVSVE-------------ELAQTRIVWQKEKKMVLTMMSGDMNIWPEY N---  89

Qy   85 ARLLKDQLSLGNAALQITDVKLQDAGVYRCMI-SYGGADYKR-------------ITVKVAPYNK 136
         :|  ||:    | |     |::   ||||        :|||              :||
Db   90 -RTIFD--ITNNLSIVILALRPSDEGTYECVVLKYEKDAFKREHLAEVTLSVKAFPTPS       146

Qy  137 INQRILVVDPVTSEHELTCQAE-GYPKAEVIWTSSDHQVLSGKTTTTNSKREEKLFNVTS    195
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Db  147 ISDFEI---PTSNIRRIICSTSGGFPEPHLSWLENGEE-LNAINTTVSQDPETELYAVSS    202

Qy  196 TLRINTTTNEIFYC-------------TFRRLDPEENHTAELVIPELPLAHPPNERTHLVIL   244
         :| | | | |:|             |  |||          |  |::  ||  ||   |:|
Db  203 KLDFNMTTNHSFMCLIKYGHLRVNQTFNWNNTKQEHFPDNLPSWAI-----------TLISVN  255

Qy  245 GAILLCLGVALTFIF--RLRKGR 265
         ||:|   ||   |: |    | |: |
Db  256 GIFVIC--CLIYCFAPRCRERR  275

Search completed: March 17, 2001, 09:44:51
Job time: 90 sec
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GenCore version 4.5
Copyright (c) 1993 - 2000 Compugen Ltd.

OM protein - protein search, using sw model

Run on: March 17, 2001, 09:44:51 ; Search time 20.85 Seconds
(without alignments)
249.762 Million cell updates/sec

Title: US-09-451-291-3
Perfect score: 1516
Sequence: 1 MRIFAGIIFTACCHLLRAFT.........KCGVEDTSSKNRNDTQFEET 290

Scoring table: BLOSUM62
    Gapop 10.0 , Gapext 0.5

Searched: 174772 seqs, 17957048 residues

Total number of hits satisfying chosen parameters: 174772

Minimum DB seq length: 0
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
    Maximum Match 100%
    Listing first 45 summaries

Database :   Issued_Patents_AA:*
1: /cgn2_6/ptodata/2/iaa/5A_COMB.pep:*
2: /cgn2_6/ptodata/2/iaa/5B_COMB.pep:*
3: /cgn2_6/ptodata/2/iaa/6_COMB.pep:*
4: /cgn2_6/ptodata/2/iaa/PCTUS_COMB.pep:*
5: /cgn2_6/ptodata/2/iaa/backfiles1.pep:*

Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match %	Length DB	DB	ID	Description
1	192	12.7	306	2	US-08-147-772-4	Sequence 4, Appli
2	192	12.7	306	2	US-08-456-104-8	Sequence 8, Appli
3	192	12.7	306	2	US-08-101-624-25	Sequence 25, Appli
4	192	12.7	306	3	US-08-153-262-4	Sequence 4, Appli
5	192	12.7	306	3	US-08-479-744A-31	Sequence 31, Appl
6	192	12.7	306	3	US-08-280-757B-31	Sequence 31, Appl
7	192	12.7	306	4	US-09-159-135-4	Sequence 4, Appli
8	192	12.7	306	4	US-09-159-135-17	Sequence 17, Appl
9	184	12.1	306	4	PCT-US95-02576-17	Sequence 17, Appl
10	177	11.7	320	4	PCT-US95-02576-2	Sequence 2, Appli
11	176.5	11.7	323	4	PCT-US94-09642-2	Sequence 2, Appli
12	176.5	11.6	329	2	US-08-456-104-2	Sequence 2, Appli
13	176.5	11.6	329	2	US-08-101-624-2	Sequence 2, Appli
14	176.5	11.6	329	3	US-08-479-744A-2	Sequence 2, Appli
15	176.5	11.6	329	3	US-08-280-757B-2	Sequence 2, Appli
16	176	11.6	589	2	PCT-US95-02576-23	Sequence 23, Appl
17	176	11.6	589	2	US-08-724-394A-1	Sequence 1, Appli
18	175.5	11.6	365	2	US-08-724-394A-3	Sequence 3, Appli
19	160	10.6	365	2	US-08-979-424-3	Sequence 3, Appli
20	159.5	10.5	288	2	US-08-147-772-2	Sequence 2, Appli
21	159.5	10.5	288	2	US-08-456-104-6	Sequence 6, Appli
22	159.5	10.5	288	2	US-08-101-624-23	Sequence 23, Appl
23	159.5	10.5	288	3	US-08-751-767A-6	Sequence 6, Appli
24	159.5	10.5	288	3	US-08-153-262-2	Sequence 2, Appli
25	159.5	10.5	288	3	US-08-479-744A-29	Sequence 29, Appl
26	159.5	10.5	288	3	US-08-280-757B-29	Sequence 29, Appl
27	159.5	10.5	288	4	US-09-159-135-2	Sequence 2, Appli
28	156	10.3	208	3	PCT-US95-02576-19	Sequence 19, Appl
			208	4	US-08-630-172-15	Sequence 15, Appl
29	152.5	10.1	581	2	US-08-724-394A-2	Sequence 2, Appli
30	146.5	9.7	342	2	US-08-724-394A-6	Sequence 6, Appli
31	144	9.5	540	2	US-08-724-394A-4	Sequence 4, Appli
32	135	8.9	610	2	US-08-724-394A-5	Sequence 5, Appli
33	124	8.2	309	2	US-08-456-104-4	Sequence 4, Appli
34	124	8.2	309	3	US-08-479-744A-23	Sequence 23, Appl
35	124	8.2	309	3	US-08-280-757B-21	Sequence 21, Appl
36	124	8.2	309	4	PCT-US95-02576-13	Sequence 13, Appl
37	124	8.2	314	4	PCT-US95-02576-11	Sequence 11, Appl
38	119.5	7.9	388	2	US-09-188-930-275	Sequence 275, App
39	119.5	7.9	553	2	US-09-263-911-9	Sequence 9, Appli
40	118	7.8	281	1	US-08-487-748A-9	Sequence 9, Appli
41	118	7.8	281	1	US-08-487-748A-10	Sequence 10, Appl
42	118	7.8	281	3	US-08-480-070C-10	Sequence 10, Appl
43	118	7.8	281	3	US-08-829-525-10	Sequence 10, Appl
44	116.5	7.7	110	3	US-08-479-744A-45	Sequence 45, Appl
45	116.5	7.7	110	3	US-08-280-757B-45	Sequence 45, Appl

ALIGNMENTS

RESULT 1
US-08-147-772-4
Sequence 4, Application US/08147772
Patent No. 5858776
GENERAL INFORMATION:
APPLICANT: Ostrand-Rosenberg, Suzanne
APPLICANT: Baskar, Sivasubramanian
APPLICANT: Glimcher, Laurie H.
APPLICANT: Freeman, Gordon J.
APPLICANT: Nadler, Lee M.
TITLE OF INVENTION: Tumor Cells With Increased Immunogenicity
NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 60 State Street, Suite 510
CITY: Boston
STATE: Massachusetts
COUNTRY: USA
ZIP: 02109
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/147,772
FILING DATE:
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
ATTORNEY/AGENT INFORMATION:
NAME: Mandragouras, Amy E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: RPI-003
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 227-7400
TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 306 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
DESCRIPTION: B lymphocyte activation antigen; Ig
DESCRIPTION: superfamily member; T cell costimulatory signal
DESCRIPTION: via activation of CD28 pathways; binds to CD28+
DESCRIPTION: T cells, transmembrane protein
FEATURE:
NAME/KEY: signal sequence
LOCATION: -37 to -1

IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
OTHER INFORMATION: hydrophobic
FEATURE:
NAME/KEY: extracellular domain
LOCATION: 1 to 210
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: transmembrane domain
LOCATION: 211 to 235
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: intracellular (cytoplasmic) domain
LOCATION: 236 to 269
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: Ig V-set domain
LOCATION: 1 to 105
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: Ig C-set domain
LOCATION: 106 to 199
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence

RELEVANT RESIDUES IN SEQ ID NO: 4: From -37 to 269

US-08-147-772-4

Query Match   12.7%;   Score 192;   DB 2;   Length 306;
Best Local Similarity   23.9%;   Pred. No. 9.5e-12;
Matches   63;   Conservative   46;   Mismatches   117;   Indels   38;   Gaps   9;

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Db    50 VLLPCRYNSPHEDESEDR---IYWQKHDKVVLSVIAGKLKVWPEY-----------KNRTL 96

Qy    94 KGNA--ALQITDVKLQDAGVYCCII------SYGGADYKRITLKVNAPYRKINQRISVDP 145
         :.:|   |: ||.||.|||.|||||       :|.::||||.|||:.  |||.||.|: |
Db    97 YDNTTYSLIILGLVLSDRGTYSCVVQKKERGTYGVKHLALVKLSIKADFSTPNITESGNP 156

Qy   146 ATSEHELICQAE-GYPEAEVIWTNSDHQPVSGKRSVTTSRTEGMLLNVTSSLRVNATAND 204
         |: .|.||:||  |||||||:|||:|: :  .|::::|: |:.|||||||  ||||||:|
Db   157 SADTKRITCFASGGFPKPRFSWLENGRE-LPGINTTISQDPESELYTISSQLDFNTTRNH 215

Qy   205 VFYCTFWRSQPGQNHTAELIIPELPATHPPQNRTHWVLLGSILLFLIVVSTVLLFLRKQV 264
         ||||||||:|||| |||:|||| |:.  | ||.||::||||:|||:||||||||||||||
Db   216 TIKCLI---KYGDAHVSEDFTWEKPPEDPPDSKNTLVLFGAGFGAVITVVVIVII---- 268

Qy   265 RMLDVEKCGVEDTSSKNRNDTQFE 288
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Db   269 -----KCFCKHRSCFRNEASRE 286
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RESULT 3
US-08-101-624-25
Sequence 25, Application US/0810l624
Patent No. 5942607
GENERAL INFORMATION:
; APPLICANT: Freeman, Gordon J.
; APPLICANT: Nadler, Lee M.
; APPLICANT: Gray, Gary S.
; TITLE OF INVENTION: No. 5942607el CTLA4/CD28 Ligands and
; TITLE OF INVENTION: Uses Therefor
; NUMBER OF SEQUENCES: 25
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: LAHIVE & COCKFIELD
; STREET: 60 State Street, Suite 510
; CITY: Boston
; STATE: Massachusetts
; COUNTRY: USA
; ZIP: 02109
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/101,624
; FILING DATE: 26-JUL-1993
; CLASSIFICATION: 514
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER:
; FILING DATE:
; ATTORNEY/AGENT INFORMATION:
; NAME: Mandragouras, Amy E.
; REGISTRATION NUMBER: 36,207
; REFERENCE/DOCKET NUMBER: RPI-004
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (617) 227-7400
; TELEFAX: (617) 227-5941
; INFORMATION FOR SEQ ID NO: 25:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 306 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; DESCRIPTION: B lymphocyte activation antigen; Ig
; DESCRIPTION: superfamily member; T cell costimulatory signal
; DESCRIPTION: via activation of CD28 pathways, binds to CD28+
; DESCRIPTION: T cells, transmembrane protein
; FEATURE:
; NAME/KEY: signal sequence
; LOCATION: -37 to -1
; IDENTIFICATION METHOD: similarity with known
; OTHER INFORMATION: hydrophobic
; FEATURE:
; NAME/KEY: extracellular domain
; LOCATION: 1 to 210
; IDENTIFICATION METHOD: similarity with known
; IDENTIFICATION METHOD: sequence
; FEATURE:
; NAME/KEY: transmembrane domain
; LOCATION: 211 to 235
; IDENTIFICATION METHOD: similarity with known
; IDENTIFICATION METHOD: sequence
; FEATURE:
; NAME/KEY: intracellular (cytoplasmic) domain
; LOCATION: 236 to 269
; IDENTIFICATION METHOD: similarity with known
; IDENTIFICATION METHOD: sequence
; FEATURE:
; NAME/KEY: Ig V-set domain
; LOCATION: 1 to 105
; IDENTIFICATION METHOD: similarity with known

; IDENTIFICATION METHOD: sequence
; FEATURE:
; NAME/KEY: Ig C-set domain
; LOCATION: 106 to 199
; IDENTIFICATION METHOD: similarity with known
; IDENTIFICATION METHOD: sequence
; PUBLICATION INFORMATION:
; AUTHORS: FREEMAN, GORDON J.
; AUTHORS: GRAY, GARY S.
; AUTHORS: GIMMI, CLAUDE D.
; AUTHORS: LOMBARD, DAVID B.
; AUTHORS: ZHOU, LIANG-JI
; AUTHORS: WHITE, MICHAEL
; AUTHORS: FINGEROTH, JOYCE D.
; AUTHORS: GRIBBEN, JOHN G.
; AUTHORS: NADLER, LEE M.
; TITLE: Structure, Expression, and T Cell Costimulatory
; TITLE: Activity Of The Murine Homologue Of The Human B
; TITLE: Lymphocyte Activation Antigen B7
; JOURNAL: Journal of Experimental Medicine
; VOLUME:
; ISSUE:
; PAGES:
; DATE: IN PRESS
; RELEVANT RESIDUES IN SEQ ID NO: 25: From -37 to 269

US-08-101-624-25

Query Match   12.7%; Score 192; DB 2; Length 306;
Best Local Similarity   23.9%; Pred. No. 9.5e-12;
Matches 63; Conservative 46; Mismatches 117; Indels 38; Gaps   9;

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Qy    36 VTMECRF--PVERELDLLALVVWEKEDEQVIQFVAGEEDLKPQHSNFRGRASLPKDQLL  93
          |  |: |:         ||  | || | ||  | :|:|     | | |   |:  |
Db    50 VLLPCRYNSPHEDESEDR--IYWQKHDKVVLSVIAGKLKVWPEY------KNRTL  96

Qy    94 KGNA--ALQITDVKLQDAGVYCII------SYGGADYKRITLKVNAPYRKINQRISVDP 145
          |         ||       || ||            | |   ||      |:      |
Db    97 YDNTTYSLIILGLVLSDRGTYSCVVQKKERGTYGVKIHLALVKLSIKADFSTPNITESGNP 156

Qy   146 ATSEHELICQAE-GYPEAEVIWTNSDHQPVSGKRSVTTSRTEGMLLNVTSSLRVNATAND 204
          | |   | |||  ||     ||||    | | | ||  ||  |  |||| || |
Db   157 SADTKRITCFASGGFPKPRFSWLENGRE-LPGINTIISQDPESELYTISSQLDFNTTRNH 215

Qy   205 VEYCTFWRSQPGQNHTAELIIPELPATHPPQNRTHWVLLGSTIILFLIVVSTVLLFLRKQV 264
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Db   216 TIKCLI--KYGDAHVSEDFTWEKPPEDPPDSKNTLVLFGAGFGAVITVVVIVVII---- 268

Qy   265 RMLDVERCGVEDTSSKNRNDTQFE 288
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Db   269 -----KCFCKIHRSCFRNEASRE 286
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RESULT 4
US-08-153-262-4
; Sequence 4, Application US/08153262
; Patent No. 6071716
; GENERAL INFORMATION:
; APPLICANT: FREEMAN, GORDON J.
; APPLICANT: NADLER, LEE M.
; APPLICANT: FREEDMAN, ARNOLD S.
; TITLE OF INVENTION: DNA Encoding B7, A New Member
; TITLE OF INVENTION: Of The IgG Superfamily With Unique Expression On
; TITLE OF INVENTION: Activated And Neoplastic B Cells.
; NUMBER OF SEQUENCES: 4
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: The Dana-Farber Cancer Institute
; STREET: 44 Binney Street
; CITY: Boston
; STATE: Massachusetts
; COUNTRY: U.S.A.
; ZIP: 02115
; COMPUTER READABLE FORM:

MEDIUM TYPE: Diskette, 3.50 inch, 720kb storage
COMPUTER: IBM Personal System 2; Model 30
OPERATING SYSTEM: MS/DOS
SOFTWARE: WordPerfect 5.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/153,262
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/751,306
FILING DATE: 28-AUG-1991
ATTORNEY/AGENT INFORMATION:
NAME: HART, JULIA D.
REGISTRATION NUMBER: 33132
REFERENCE/DOCKET NUMBER: DFCI-116.1
TELECOMMUNICATION INFORMATION:
TELEPHONE: (203) 255-8900
TELEFAX: (203) 259-2846
INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 306 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
DESCRIPTION: B lymphocyte activation antigen; Ig
DESCRIPTION: superfamily member; T cell costimulatory signal
DESCRIPTION: via activation of CD28 pathways, binds to CD28+
DESCRIPTION: T cells, transmembrane protein
FEATURE:
NAME/KEY: signal sequence
LOCATION: -37 to -1
IDENTIFICATION METHOD: similarity with known
OTHER INFORMATION: hydrophobic
FEATURE:
NAME/KEY: extracellular domain
LOCATION: 1 to 210
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: transmembrane domain
LOCATION: 211 to 235
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: intracellular (cytoplasmic) domain
LOCATION: 236 to 269
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: Ig V-set domain
LOCATION: 1 to 105
IDENTIFICATION METHOD: similarity with known
FEATURE:
NAME/KEY: Ig C-set domain
LOCATION: 106 to 199
IDENTIFICATION METHOD: similarity with known
PUBLICATION INFORMATION:
AUTHORS: FREEMAN, GORDON J.
AUTHORS: GRAY, GARY S.
AUTHORS: GIMMI, CLAUDE D.
AUTHORS: LOMBARD, DAVID B.
AUTHORS: ZHOU, LIANG-JI
AUTHORS: WHITE, MICHAEL
AUTHORS: FINGEROTH, JOYCE D.
AUTHORS: GRIBBEN, JOHN G.
AUTHORS: NADLER, LEE M.
TITLE: Structure, Expression, and T Cell Costimulatory
TITLE: Activity Of The Murine Homologue Of The Human B
TITLE: Lymphocyte Activation Antigen B7
JOURNAL: Journal of Experimental Medicine

VOLUME:
ISSUE:
PAGES:
DATE: IN PRESS
RELEVANT RESIDUES IN SEQ ID NO: 4: From -37 to 269

US-08-153-262-4

Query Match   12.7%;   Score 192; DB 3; Length 306;
Best Local Similarity   23.9%;   Pred. No. 9.5e-12;
Matches   63; Conservative 46; Mismatches 117; Indels 38; Gaps 9;

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Qy   36 VTMECRF--PVERELDLLALVVVWEKDEDQVIQFVAGEEDLKPQHSNFRGRASLPKDQLL  93
          : :| || :|  |  ||| | : ||| ||  |  | |    |    || |::| |
Db   50 VLLPCRYNSPHEDESEDR--IYWQKHDKVVLSVIAGKLKVWPEY------KNRTL  90

Qy   94 KGNA--ALQITDVKLQDAGVYCCII------SYGGADYKRITLKVNAPYRKINQRISVDP 145
          :|     : | :| || |  :|:      |   |:|  : |  |:|    :|   : :|
Db   97 YDNTTYSLIILGLVLSDRGTYSCVVQKKERGTYGVKHLALVKLSIKADFSTPNITESGNP 156

Qy  146 ATSEHELICQAE-GYPEAEVIWTNSDHQPVSGKRSVTTSRTEGMLLNVTSSLRVNATAND 204
          :   :| ||:  |:| ::| |  |  : | |:     | :|||:|||||  :| |  |
Db  157 SADTKRITCFASGGFPKPRFSWLENGRE-LPGINTTISQDPESELYTISSQLDFNTTRNH 215

Qy  205 VFYCTFWRSQPGQNHTAELIIPELPATHPPQNRTHWVLLGSILLFLIVVSTVLLFLRKQV 264
          :: |  |  ||  |:|  | || |  || |   ||  ||| |  |:| ||  |:| :
Db  216 TIKCLI---KYGDAHVSEDFTWEKPPEDPPDSKNTLVLFGAGFGAVITVVVVIVII---- 268

Qy  265 RMLDVEKCGVEDTSSKNRNDTQFE 288
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Db  269 ------KCFCKHRSCFRNEASRE 286
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RESULT 5
US-08-479-744A-31
Sequence 31, Application US/08479744A
Patent No. 6084067
GENERAL INFORMATION:
APPLICANT: Freeman, Gordon J.
APPLICANT: Nadler, Lee M.
APPLICANT: Gray, Gary S.
TITLE OF INVENTION: No. 6084067e1 CTLA4/CD28 Ligands and
TITLE OF INVENTION: Uses Therefor
NUMBER OF SEQUENCES: 55
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD, LLP
STREET: 60 State Street
CITY: Boston
STATE: Massachusetts
COUNTRY: USA
ZIP: 02109
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/479,744A
FILING DATE: June 7, 1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/280,757
FILING DATE: 26-JUL-1994
APPLICATION NUMBER: 08/109,393
FILING DATE: 28-AUG-1993
APPLICATION NUMBER: 08/101,624
FILING DATE: 26-JULY-1993
APPLICATION NUMBER: 08/147,773
FILING DATE: 3-NOV-1993
ATTORNEY/AGENT INFORMATION:
NAME: Mandragouras, Amy E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: RPI-004CP3

```
TELECOMMUNICATION INFORMATION:
   TELEPHONE: (617) 227-7400
   TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 31:
  SEQUENCE CHARACTERISTICS:
     LENGTH: 306 amino acids
     TYPE: amino acid
     TOPOLOGY: linear
  MOLECULE TYPE: protein
     DESCRIPTION: B lymphocyte activation antigen; Ig
     DESCRIPTION: superfamily member; T cell costimulatory signal
     DESCRIPTION: via activation of CD28 pathways, binds to CD28+
     DESCRIPTION: T cells, transmembrane protein
  FEATURE:
     NAME/KEY: signal sequence
     LOCATION: -37 to -1
     IDENTIFICATION METHOD: similarity with known
     OTHER INFORMATION: hydrophobic
  FEATURE:
     NAME/KEY: extracellular domain
     LOCATION: 1 to 210
     IDENTIFICATION METHOD: similarity with known sequence
  FEATURE:
     NAME/KEY: transmembrane domain
     LOCATION: 211 to 235
     IDENTIFICATION METHOD: similarity with known sequence
  FEATURE:
     NAME/KEY: intracellular (cytoplasmic) domain
     LOCATION: 236 to 269
     IDENTIFICATION METHOD: similarity with known sequence
  FEATURE:
     NAME/KEY: Ig V-set domain
     LOCATION: 1 to 105
     IDENTIFICATION METHOD: similarity with known sequence
  FEATURE:
     NAME/KEY: Ig C-set domain
     LOCATION: 106 to 199
     IDENTIFICATION METHOD: similarity with known sequence
  PUBLICATION INFORMATION:
     AUTHORS: FREEMAN, GORDON J.
     AUTHORS: GRAY, GARY S.
     AUTHORS: GIMMI, CLAUDE D.
     AUTHORS: LOMBARD, DAVID B.
     AUTHORS: ZHOU, LIANG-JI
     AUTHORS: WHITE, MICHAEL
     AUTHORS: FINGEROTH, JOYCE D.
     AUTHORS: GRIBBEN, JOHN G.
     AUTHORS: NADLER, LEE M.
     TITLE: Structure, Expression, and T Cell Costimulatory
     TITLE: Activity Of The Murine Homologue Of The Human B
     TITLE: Lymphocyte Activation Antigen B7
     JOURNAL: Journal of Experimental Medicine
     VOLUME:
     ISSUE:
     PAGES:
     DATE: IN PRESS
  RELEVANT RESIDUES IN SEQ ID NO: 31: From -37 to 269
US-08-479-744A-31
```

```
Query Match     12.7%;  Score 192;  DB 3;  Length 306;
Best Local Similarity   23.9%;  Pred No. 9.5e-12;
Matches   63;  Conservative  46;  Mismatches 117;  Indels  38;  Gaps   9;

Qy    36  VTMECRF--PVERELDLLALVVVWEKEDEQVIQFVAGEEDLKPQHSNFRGRASLPKDQLL  93
          ::|:|:|   ::|:|:|: :::|:| |:|| :|:|| |::: :|::| | |||: |
Db    50  VLLPCRYNSPHEDESEDR--IYWQKHDKVVLSVIAGKLKVWPEY--------KNRTL  96
```

```
RESULT 6
US-08-280-757B-31
Sequence 31, Application US/08280757B
Patent No. 6130316
GENERAL INFORMATION:
   APPLICANT: Freeman, Gordon J.
   APPLICANT: Nadler, Lee M.
   APPLICANT: Gray, Gary S.
   APPLICANT: Greenfield, Edward
   TITLE OF INVENTION: No. 6130316e1 CTLA4/CD28 Ligands and
   TITLE OF INVENTION: Uses Therefor
   NUMBER OF SEQUENCES: 53
   CORRESPONDENCE ADDRESS:
      ADDRESSEE: LAHIVE & COCKFIELD
      STREET: 60 State Street, Suite 510
      CITY: Boston
      STATE: Massachusetts
      COUNTRY: USA
      ZIP: 02109
   COMPUTER READABLE FORM:
      MEDIUM TYPE: Floppy disk
      COMPUTER: IBM PC compatible
      OPERATING SYSTEM: PC-DOS/MS-DOS
      SOFTWARE: Patentin Release #1.0, Version #1.25
   CURRENT APPLICATION DATA:
      APPLICATION NUMBER: US/08/280,757B
      FILING DATE: 26-JUL-1994
      CLASSIFICATION: 435
   PRIOR APPLICATION DATA:
      APPLICATION NUMBER: 08/101,624
      FILING DATE: 26-JULY-1993
      APPLICATION NUMBER: 08/109,393
      FILING DATE: 19-AUG-1993
      APPLICATION NUMBER: 08/147,773
      FILING DATE: 3-NOV-1993
   ATTORNEY/AGENT INFORMATION:
      NAME: Mandragouras, Amy E.
      REGISTRATION NUMBER: 36,207
      REFERENCE/DOCKET NUMBER: RPI-004CP2
   TELECOMMUNICATION INFORMATION:
      TELEPHONE: (617) 227-7400
      TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 31:
   SEQUENCE CHARACTERISTICS:
      LENGTH: 306 amino acids
      TYPE: amino acid
      TOPOLOGY: linear
   MOLECULE TYPE: protein
      DESCRIPTION: B lymphocyte activation antigen; Ig
      DESCRIPTION: superfamily member; T cell costimulatory signal
      DESCRIPTION: via activation of CD28 pathways, binds to CD28+
      DESCRIPTION: T cells, transmembrane protein
   FEATURE:
      NAME/KEY: signal sequence
      LOCATION: -37 to -1
```

```
Qy    94  KGNA--ALQITDVKLQDAGVYCCII-------SYGGADYKRITLKVVNAPYRKINQRISVDP  145
          :|:|   |||||||  |:| ||:||          ||||||||||| |||||| | :|||||
Db    97  YDNTTYSLIILGLVLSDRGTYSCVVQKKERGTYGVKHLALVKLSIKADFSTPNITESGNP  156

Qy   146  ATSEHELICQAE-GYPEAEVIWTNSDHQPVSGKRSVTTSRTEGMLLNVTSSLRVNATAND  204
          | :: ::||:|  |:|| ::||:|| :  ||| :  | ||:|:|||:|||| |:|| |
Db   157  SADTKRITCFASGGFPKPRFSWLENGRE-LPGINTTISQDPESELYTISSQLDFNTTRNH  215

Qy   205  VFYCTFWRSQPGQNHTAELIIPELPATHPPQNRTHWVLLGSILLFLIVVSTVLLFLRKQV  264
          ::|| : |:: | :   ||| ||:   || : ||:|:|||| :||:||: ::|:|||||
Db   216  TIKCLI---KYGDAHVSEDFTWEKPPEDPPDSKNTLVLFGAGFGAVITVVVVVVVIII----  268

Qy   265  RMLDVEKCGVEDTSSKNRNDTQFE  288
          :|   |||| |:|| :: ||:|:|
Db   269  ------KCFCKIHRSCFRRNEASRE  286
```

IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
OTHER INFORMATION: hydrophobic
FEATURE:
NAME/KEY: extracellular domain
LOCATION: 1 to 210
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: transmembrane domain
LOCATION: 211 to 235
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: intracellular (cytoplasmic) domain
LOCATION: 236 to 269
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: Ig V-set domain
LOCATION: 1 to 105
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: Ig C-set domain
LOCATION: 106 to 199
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
PUBLICATION INFORMATION:
AUTHORS: FREEMAN, GORDON J.
AUTHORS: GRAY, GARY S.
AUTHORS: GIMMI, CLAUDE D.
AUTHORS: LOMBARD, DAVID B.
AUTHORS: ZHOU, LIANG-JI
AUTHORS: WHITE, MICHAEL
AUTHORS: FINGEROTH, JOYCE D.
AUTHORS: GRIBBEN, JOHN G.
AUTHORS: NADLER, LEE M.
TITLE: Structure, Expression, and T Cell Costimulatory
TITLE: Activity Of The Murine Homologue Of The Human B
TITLE: Lymphocyte Activation Antigen B7
JOURNAL: Journal of Experimental Medicine
VOLUME:
ISSUE:
PAGES:
DATE: IN PRESS
RELEVANT RESIDUES IN SEQ ID NO: 31: From -37 to 269
US-08-280-757B-31

Query Match   12.7%; Score 192; DB 3; Length 306;
Best Local Similarity 23.9%; Pred. No. 9.5e-12;
Matches 63; Conservative 46; Mismatches 117; Indels 38; Gaps 9;

```
Qy  36 VTMECRF--PVERELDLLALVVWEKEDEQVIQFVAGEEDLKPQHSNFRGRASLPKDQLL 93
          :  ::!:  !  !:!::!!!:!:: !:!:! !:!!:!:! !:! :!!: !
Db  50 VLLPCRYNSPHEDESEDR---IVWQKHDKVVLSVIAGKLKVWPEY------KNRTL 96

Qy  94 KGNA--ALQITDVKLQDAGVYCCII------SYGGADYKRITLKVNAPYRKINQRISVDP 145
          :!!: !  !!!:! :::   !!  !
Db  97 YDNTTYSLILGLVLSDRGTYSCVVQKKERGTYGVKHLALVKLSIKADFSTPNITESGNP 156

Qy 146 ATSEHELICQAE-GYPEAEVIWTNSDHQPVSGKRSVTTSRTEGMLLNVTSSLRVNATAND 204
          !!  :!!:! :!:!   !!:!
Db 157 SADTKRITCFASGGPKPRFSWLENGRE-LPGINTTISQDPESELYTISSQLDFNTTRNH 215

Qy 205 VFYCTFWRSQPGQNHTAELIIPELPATHPPQNRFHWVLLGSILLFLIVVSTVLLFLRKQV 264
          ! !  !!:   !:!!   !::!  !! !! ::: !
Db 216 TIKCLI---KYGDAHVSEDFTWEKPEDPPDSKNTLVLFGAGFGAVITVVVIVVII---- 268

Qy 265 RMLDVEKCGVEDTSSKNRNDTQFE 288
          !! :!  !!
Db 269 -----KCFCKHRSCFRNEASRE 286
```

RESULT 7
US-09-159-135-4
Sequence 4, Application US/09159135
Patent No. 6149905
GENERAL INFORMATION:
APPLICANT: Ostrand-Rosenberg, Suzanne
APPLICANT: Baskar, Sivasubramanian
APPLICANT: Glimcher, Laurie H.
APPLICANT: Freeman, Gordon J.
APPLICANT: Nadler, Lee M.
TITLE OF INVENTION: Tumor Cells With Increased Immunogenicity
NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 60 State Street, Suite 510
CITY: Boston
STATE: Massachusetts
COUNTRY: USA
ZIP: 02109
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/159,135
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/147,772
FILING DATE:
ATTORNEY/AGENT INFORMATION:
NAME: Mandragouras, Amy E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: RPI-003
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 227-7400
TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 306 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
DESCRIPTION: B lymphocyte activation antigen; Ig
DESCRIPTION: superfamily member; T cell costimulatory signal
DESCRIPTION: via activation of CD28 pathways, binds to CD28+
DESCRIPTION: T cells, transmembrane protein
FEATURE:
NAME/KEY: signal sequence
LOCATION: -37 to -1
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
OTHER INFORMATION: hydrophobic
FEATURE:
NAME/KEY: extracellular domain
LOCATION: 1 to 210
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: transmembrane domain
LOCATION: 211 to 235
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: intracellular (cytoplasmic) domain
LOCATION: 236 to 269
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence .
FEATURE:
NAME/KEY: Ig V-set domain

LOCATION: 1 to 105
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
FEATURE:
NAME/KEY: Ig C-set domain
LOCATION: 106 to 199
IDENTIFICATION METHOD: similarity with known
IDENTIFICATION METHOD: sequence
PUBLICATION INFORMATION:
AUTHORS: FREEMAN, GORDON J.
AUTHORS: GRAY, GARY S.
AUTHORS: GIMMI, CLAUDE D.
AUTHORS: LOMBARD, DAVID B.
AUTHORS: ZHOU, LIANG-JI
AUTHORS: WHITE, MICHAEL
AUTHORS: FINGEROTH, JOYCE D.
AUTHORS: GRIBBEN, JOHN G.
AUTHORS: NADLER, LEE M.
TITLE: Structure, Expression, and T Cell Costimulatory
TITLE: Activity Of The Murine Homologue Of The Human B
TITLE: Lymphocyte Activation Antigen B7
JOURNAL: Journal of Experimental Medicine
VOLUME:
ISSUE:
PAGES:
DATE: IN PRESS
RELEVANT RESIDUES IN SEQ ID NO: 4: From -37 to 269

US-09-159-135-4

Query Match 12.7%; Score 192; DB 3; Length 306;
Best Local Similarity 23.9%; Pred. No. 9.5e-12;
Matches 63; Conservative 46; Mismatches 117; Indels 38; Gaps 9;

```
Qy   36 VIMECRF--PVERELDLLALVVYWEKEDEQVIQFVAGEEDLKPQHSNFRGRASLPKDQLL 93
         : ||:    |  ||:|  ||| :| :: :||| :|::: |:::|  ||:
Db   50 VLLPCRYNSPHEDESEDR---IYWQKHDKVVLSVIAGKLKVWPEY-------KNRTL 96

Qy   94 KGNA--ALQITDVKLQDAGVYCCII-----SYGGADYKRITLKVNAPYRKINQRISVDP 145
         :|     |:|:||| |||::  |::         |||:|:|| :|||:  |::
Db   97 YDNTTYSLIILGLVLSDRGTYSCVVQKKERGTYGVKIHALALVKLSIKADFSTPNITESGNP 156

Qy  146 ATSEHELICQAE-GYPEAEVIWTNSDHQPVSGKRSVTTSRTEGMLLNVTSSLRVNAPAND 204
         |:|   |:|  :   |:| ::|||::|| :||:|||||: :|:::||||| |||||
Db  157 SADTKRITCFASGGFPKPRFSWLENGRE-LPGINTTIISQDPESELYTISSQLDFNTRNH 215

Qy  205 VFYCTFWRSQPGQNHTAELIIPELPATHPPQNRTHWVLLGSILLFLIVVSTVLLFLRKQV 264
         : :|:    |::|::|||:|||||:||||||  |:::|| |:||:|:||||:||:||
Db  216 TIKCLI--KYGDAHVSEDFTWEKPPEDPPDSKNTLVLFGAGFGAVITVVVIVVII---- 268

Qy  265 RMLDVEKCGVEDTSSKNRNDTQFE 288
         | |  ||| ||||::|
Db  269 ------KCFCKHRSCFRNEASRE 286
```

RESULT 8
PCT-US95-02576-17
Sequence 17, Application PC/TUS9502576
GENERAL INFORMATION:
APPLICANT:
TITLE OF INVENTION: Novel Forms Of T Cell Costimulatory Molecules
TITLE OF INVENTION: and Uses Therefor
NUMBER OF SEQUENCES: 65
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 60 State Street, suite 510
CITY: Boston
STATE: Massachusetts
COUNTRY: USA
ZIP: 02109-1875
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
APPLICATION NUMBER: PCT/US95/02576
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/205,697
FILING DATE: 02-Mar-1994
ATTORNEY/AGENT INFORMATION:
NAME: Mandragouras, Amy E.
REGISTRATION NUMBER: 36,207
REFERENCE/DOCKET NUMBER: BWI-120CPPC
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617)227-7400
TELEFAX: (617)227-5941
INFORMATION FOR SEQ ID NO: 17:
SEQUENCE CHARACTERISTICS:
LENGTH: 306 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
PCT-US95-02576-17

Query Match 12.1%; Score 184; DB 4; Length 306;
Best Local Similarity 23.5%; Pred. No. 6.3e-11;
Matches 62; Conservative 46; Mismatches 118; Indels 38; Gaps 9;

```
Qy   36 VIMECRF--PVERELDLLALVVYWEKEDEQVIQFVAGEEDLKPQHSNFRGRASLPKDQLL 93
         : ||:    |  ||:|  ||| :| :: :||| :|::: |:::|  ||:
Db   50 VLLPCRYNSPHEDESEDR---IYWQKHDKVVLSVIAGKLKVWPEY-------KNRTL 96

Qy   94 KGNA--ALQITDVKLQDAGVYCCII-----SYGGADYKRITLKVNAPYRKINQRISVDP 145
         :|     |:|:||| |||::  |::         |||:|:|| :|||:  |::
Db   97 YDNTTYSLIILGLVLSDRGTYSCVVQKKERGTYEVKIHALALVKLSIKADFSTPNITESGNP 156

Qy  146 ATSEHELICQAE-GYPEAEVIWTNSDHQPVSGKRSVTTSRTEGMLLNVTSSLRVNAPAND 204
         |:|   |:|  :   |:| ::|||::|| :||:|||||: :|:::||||| |||||
Db  157 SADTKRITCFASGGFPKPRFSWLENGRE-LPGINTTIISQDPESELYTISSQLDFNTRNH 215

Qy  205 VFYCTFWRSQPGQNHTAELIIPELPATHPPQNRTHWVLLGSILLFLIVVSTVLLFLRKQV 264
         : :|:    |::|::|||:|||||:||||||  |:::|| |:||:|:||||:||:||
Db  216 TIKCLI--KYGDAHVSEDFTWEKPPEDPPDSKNTLVLFGAGFGAVITVVVIVVII---- 268

Qy  265 RMLDVEKCGVEDTSSKNRNDTQFE 288
         | |  ||| ||||::|
Db  269 ------KCFCKHRSCFRNEASRE 286
```

RESULT 9
PCT-US95-02576-2
Sequence 2, Application PC/TUS9502576
GENERAL INFORMATION:
APPLICANT:
TITLE OF INVENTION: Novel Forms Of T Cell Costimulatory Molecules
TITLE OF INVENTION: and Uses Therefor
NUMBER OF SEQUENCES: 65
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 60 State Street, suite 510
CITY: Boston
STATE: Massachusetts
COUNTRY: USA
ZIP: 02109-1875
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
APPLICATION NUMBER: PCT/US95/02576
FILING DATE:
PRIOR APPLICATION DATA:

APPLICATION NUMBER: US 08/205,697
  FILING DATE: 02-Mar-1994
ATTORNEY/AGENT INFORMATION:
  NAME: Mandragouras, Amy E.
  REGISTRATION NUMBER: 36,207
  REFERENCE/DOCKET NUMBER: BMI-120CPPC
TELECOMMUNICATION INFORMATION:
  TELEPHONE: (617)227-7400
  TELEFAX: (617)227-5941
INFORMATION FOR SEQ ID NO: 2:
  SEQUENCE CHARACTERISTICS:
    LENGTH: 320 amino acids
    TYPE: amino acid
    TOPOLOGY: linear
  MOLECULE TYPE: protein
PCT-US95-02576-2

Query Match   11.7%; Score 177; DB 4; Length 320;
Best Local Similarity   23.6%; Pred. No. 3.5e-10;
Matches   56; Conservative   45; Mismatches 108; Indels 28; Gaps 8;

```
Qy   36 VTMECRF--PVERELDLLALVVYWEKEDEQVIQFVAGEEDLKPQHSNFRGRASLPKDQLL 93
            |:||  | ||||||||||||||||||||||:| :|| | | | |||||||:||  |:
Db   50 VLLPCRYNSPHEDESEDR--IYWQKHDKVVLSVIAGKLKVWPEY------KNRTL 96

Qy   94 KGNA--ALQITDVKLQDAGVYCCII-----SYGGADYKRITLKVNAPYRKINQRISVDP 145
        | :||       |  | | :|| ||||        | ||| | |  | ::|| ||
Db   97 YDNTTYSLIILGLVLSDRGTYSCVVQKKERGTYEVKHLALVKLSIKADFSTPNITESGNP 156

Qy  146 AISEHELICQAE-GYPEAEVIWTNSDHQPVSGKRSVTTSRTEGMLLNVTSSLRVNATAND 204
          | :||  |   |||||||||||||||||:|| :|| ||||||||||:|||||||||
Db  157 SADTKRITCFASGGFPKPRFSWLENGRE-LPGINTTISQDPESELYTISSQLDFNTTRNH 215

Qy  205 VFYCTFWRSQPGQNHTAELIIPELPATHPPQNRTHWVLLGSILLFLIVSSTVLLFLR 261
           || ||||||| |||||||||||||||||||| :||||||||||||||  ||:|
Db  216 TIKCLI---KYGDAHVSEDFTWEKPEPDPDSKNTLVLFGAGFGAVITVVVIVIIK 269
```

RESULT 10
PCT-US94-09642-2
Sequence 2, Application PC/TUS9409642
GENERAL INFORMATION:
  APPLICANT:
  TITLE OF INVENTION: Purified Mammalian CTLA-4 Binding
  TITLE OF INVENTION: Protein and Related Reagents
  NUMBER OF SEQUENCES: 2
  CORRESPONDENCE ADDRESS:
    ADDRESSEE: Schering-Plough Corporation, M-3-W
    STREET: One Giralda Farms
    CITY: Madison
    STATE: New Jersey
    COUNTRY: USA
    ZIP: 07940-1000
  COMPUTER READABLE FORM:
    MEDIUM TYPE: Floppy disk
    COMPUTER: Apple Macintosh IIci
    OPERATING SYSTEM: System Software 7.1
    SOFTWARE: Microsoft Word 5.1a
  CURRENT APPLICATION DATA:
    APPLICATION NUMBER: PCT/US94/09642
    FILING DATE:
    CLASSIFICATION:
  PRIOR APPLICATION DATA:
    APPLICATION NUMBER: US 08/120,606
    FILING DATE: 13-SEP-1993
  PRIOR APPLICATION DATA:
    APPLICATION NUMBER: US 08/116,882
    FILING DATE: 03-SEP-1993
  ATTORNEY/AGENT INFORMATION:
    NAME: Blasdale, John H. C.
    REGISTRATION NUMBER: 31,895
    REFERENCE/DOCKET NUMBER: DX0390K1

TELECOMMUNICATION INFORMATION:
  TELEPHONE: 201-822-7398
  TELEFAX: 201-822-7039
INFORMATION FOR SEQ ID NO: 2:
  SEQUENCE CHARACTERISTICS:
    LENGTH: 323 amino acids
    TYPE: amino acid
    TOPOLOGY: linear
  MOLECULE TYPE: protein
PCT-US94-09642-2

Query Match   11.6%; Score 176.5; DB 4; Length 323;
Best Local Similarity   23.1%; Pred. No. 4e-10;
Matches   73; Conservative   57; Mismatches 109; Indels 77; Gaps 15;

```
Qy   18 AFITTAPKDLIYVVEY-GSNVTMECRFPVERELDLLALVVYWEKEDEQVIQFV-AGEEDLK 75
           || |||  | |    || ||  || |||||||||||:|:||::||||| :  |||||
Db   11 AFLLSGAAPLKIQAYFNETADLPCQFANSQNQSLSELVVFWQDQENLVLNEVYLGKEKFD 70

Qy   76 PQHSNFRGRASLPKDQLLKGNAALQITDVKLQDAGVYCCIISYGGADYKRITLKVNAPYR 135
         ||||||||||||||:|  :|:|:||:||  | |||||||||  || ||| ||:|  ||
Db   71 SVHSKYMGRTSPDSD----SWTLRLHNLQIKDKGLYQCII-----HHKKPTGMIR--IH 118

Qy  136 KINQRISVDPATSEHELI----------CQA-EGYPEAEVIWTNSDHQPVSGKRSV 180
         || :|| ||  ||:|           ||  |||||||||||||||||||||||:
Db  119 QMNSELSVLANFSQPEIVPISNITENVYINLICSSIHGYPEPK-------------KMSV 165

Qy  181 ------TTSRTEGM--------LLNVTSSLRV--NATANDVFYC----------TFWRSQP 215
            :|       |:  | |||||||     | |  |||    :||
Db  166 LLRTKNSTIEYDGIMQKSQDNVTELYDVSISLSVSFPDVTSNMTIFCLLETDKTRLLSSP 225

Qy  216 GQNHTAELIIPELPATHPPQNRTHWV--LLGSILLFLIVSTVLLFLRKQVRMLDVEKCG 273
          :||||||||||||||||||||||||  ||||||||||| :|| |||  ||:   |||
Db  226 ---FSIELEDPQPPPDHIP----WITAVLPTVIICVWVFCLLLMKWKKKKRPRNSYKCG 277

Qy  274 VEDTSSKNRNDTQPEE 289
          |:| |
Db  278 TNTMERESEQIKKRE 293
```

RESULT 11
US-08-456-104-2
Sequence 2, Application US/08456104
Patent No. 5861310
GENERAL INFORMATION:
  APPLICANT: Freeman, Gordon J.
  APPLICANT: Nadler, Lee M.
  APPLICANT: Gray, Gary S.
  TITLE OF INVENTION: TUMOR CELLS MODIFIED TO EXPRESS B7-2 AND B7-3 WITH INCREASE
  NUMBER OF SEQUENCES: 8
  CORRESPONDENCE ADDRESS:
    ADDRESSEE: LAHIVE & COCKFIELD
    STREET: 60 State Street, Suite 510
    CITY: Boston
    STATE: Massachusetts
    COUNTRY: USA
    ZIP: 02109
  COMPUTER READABLE FORM:
    MEDIUM TYPE: Floppy disk
    COMPUTER: IBM PC compatible
    OPERATING SYSTEM: PC-DOS/MS-DOS
    SOFTWARE: PatentIn Release #1.0, Version #1.25
  CURRENT APPLICATION DATA:
    APPLICATION NUMBER: US/08/456,104
    FILING DATE:
    CLASSIFICATION: 424
  PRIOR APPLICATION DATA:
    APPLICATION NUMBER: 08/101,624;
    FILING DATE: 26-JUL-1993;
    APPLICATION NUMBER: 08/109,393;
    FILING DATE: 19-AUG-1993
  ATTORNEY/AGENT INFORMATION:

```
'  NAME: Mandragouras, Amy E.
'  REGISTRATION NUMBER: 36,207
'  REFERENCE/DOCKET NUMBER: RPI-008
'  TELECOMMUNICATION INFORMATION:
'     TELEPHONE: (617) 227-7400
'     TELEFAX: (617) 227-5941
'  INFORMATION FOR SEQ ID NO: 2:
'  SEQUENCE CHARACTERISTICS:
'     LENGTH: 329 amino acids
'     TYPE: amino acid
'     TOPOLOGY: linear
'     MOLECULE TYPE: protein
US-08-456-104-2
```

```
Query Match     11.6%;   Score 176.5;  DB 2;  Length 329;
Best Local Similarity  23.1%;  Pred. No. 4.1e-10;
Matches  73;  Conservative  57;  Mismatches  109;  Indels  77;  Gaps  15;

Qy   18 AFTITAPKDLYVVEY-GSNVTMECRFPVERELDLLALVVYWEKEDEQVIQFV-AGEEDLK 75
            :|:|::        ||  :: | :|  ||::: :|::   :|: :: :|:  ||
Db   17 AFLLSGAAPLKIQAYFNETADLPCQFANSQNQSLSELVFWQDQENLVLNEVYLGKEKFD 76

Qy   76 PQHSNFRGRASLPKDQLLKGNAALQITDVKLQDAGVYCCIISYGGADYKRITLKVNAPYR 135
           |:| ::|      ::| |   ||| :|:|:||||:||||||| |::|::| |||||| ||
Db   77 SVHSKYMGRTSFDSD----SWTLRLHNLQIKDKGLYQCII-----HHKKPPTGMIR--IH 124

Qy  136 KINQRISVDPATSEHELI------------CQA-EGYPEAEVIWTNSDHQPVSGKRSV 180
            :|| | |      ||||             ||   |||||:|:   ||| |
Db  125 QMNSELSVLANFSQPEIVPISNITENVYINLTCSSIHGYPEPK-------------KMSV 171

Qy  181 ------TTSRTEGM-------LLNVTSSLRV--NATANDVFYC------TFWRSQP 215
               :|  |||:|      ::|  |||  |:|  :|:|:   |||      |||||
Db  172 LLRTKNSTIEYDGIMQKSQDNVTELYDVSISLSVSFPDVTSNMTIFCILEFDKTRLLSSP 231

Qy  216 GQNHTAELIIPELPATHPPQNRTHWV--LLGSILFLIVVSTVLLFLRKQVRMLDVEKCG 273
           ||| :|||:|:|||| |::|::|     |||::|| ||  : :|| |:||  |  :|||
Db  232 ---FSIELEDPQPPPDHIP----WITAVLPTVIICVWVFCLILWKKKKRPRNSYKCG 283

Qy  274 VEDTSSKNRNDTQFEE 289
              :||:  |||
Db  284 TNTMEREESEQTKKRE 299
```

```
RESULT 12
US-08-101-624-2
Sequence 2, Application US/08101624
Patent No. 5942607
GENERAL INFORMATION:
   APPLICANT: Freeman, Gordon J.
   APPLICANT: Nadler, Lee M.
   APPLICANT: Gray, Gary S.
   TITLE OF INVENTION: No. 5942607el CTLA4/CD28 Ligands and
   TITLE OF INVENTION: Uses Therefor
   NUMBER OF SEQUENCES: 25
   CORRESPONDENCE ADDRESS:
      ADDRESSEE: LAHIVE & COCKFIELD
      STREET: 60 State Street, Suite 510
      CITY: Boston
      STATE: Massachusetts
      COUNTRY: USA
      ZIP: 02109
   COMPUTER READABLE FORM:
      MEDIUM TYPE: Floppy disk
      COMPUTER: IBM PC compatible
      OPERATING SYSTEM: PC-DOS/MS-DOS
      SOFTWARE: Patentin Release #1.0, Version #1.25
   CURRENT APPLICATION DATA:
      APPLICATION NUMBER: US/08/101,624
      FILING DATE: 26-JUL-1993
      CLASSIFICATION: 514
   PRIOR APPLICATION DATA:
      APPLICATION NUMBER:
```

```
'  FILING DATE:
'  ATTORNEY/AGENT INFORMATION:
'  NAME: Mandragouras, Amy E.
'  REGISTRATION NUMBER: 36,207
'  REFERENCE/DOCKET NUMBER: RPI-004
'  TELECOMMUNICATION INFORMATION:
'     TELEPHONE: (617) 227-7400
'     TELEFAX: (617) 227-5941
'  INFORMATION FOR SEQ ID NO: 2:
'  SEQUENCE CHARACTERISTICS:
'     LENGTH: 329 amino acids
'     TYPE: amino acid
'     TOPOLOGY: linear
'     MOLECULE TYPE: protein
US-08-101-624-2
```

```
Query Match     11.6%;   Score 176.5;  DB 2;  Length 329;
Best Local Similarity  23.1%;  Pred. No. 4.1e-10;
Matches  73;  Conservative  57;  Mismatches  109;  Indels  77;  Gaps  15;

Qy   18 AFTITAPKDLYVVEY-GSNVTMECRFPVERELDLLALVVYWEKEDEQVIQFV-AGEEDLK 75
            :|:|::        ||  :: | :|  ||::: :|::   :|: :: :|:  ||
Db   17 AFLLSGAAPLKIQAYFNETADLPCQFANSQNQSLSELVFWQDQENLVLNEVYLGKEKFD 76

Qy   76 PQHSNFRGRASLPKDQLLKGNAALQITDVKLQDAGVYCCIISYGGADYKRITLKVNAPYR 135
           |:| ::|      ::| |   ||| :|:|:||||:||||||| |::|::| |||||| ||
Db   77 SVHSKYMGRTSFDSD----SWTLRLHNLQIKDKGLYQCII-----HHKKPPTGMIR--IH 124

Qy  136 KINQRISVDPATSEHELI------------CQA-EGYPEAEVIWTNSDHQPVSGKRSV 180
            :|| | |      ||||             ||   |||||:|:   ||| |
Db  125 QMNSELSVLANFSQPEIVPISNITENVYINLTCSSIHGYPEPK-------------KMSV 171

Qy  181 ------TTSRTEGM-------LLNVTSSLRV--NATANDVFYC------TFWRSQP 215
               :|  |||:|      ::|  |||  |:|  :|:|:   |||      |||||
Db  172 LLRTKNSTIEYDGIMQKSQDNVTELYDVSISLSVSFPDVTSNMTIFCILEFDKTRLLSSP 231

Qy  216 GQNHTAELIIPELPATHPPQNRTHWV--LLGSILFLIVVSTVLLFLRKQVRMLDVEKCG 273
           ||| :|||:|:|||| |::|::|     |||::|| ||  : :|| |:||  |  :|||
Db  232 ---FSIELEDPQPPPDHIP----WITAVLPTVIICVWVFCLILWKKKKRPRNSYKCG 283

Qy  274 VEDTSSKNRNDTQFEE 289
              :||:  |||
Db  284 TNTMEREESEQTKKRE 299
```

```
RESULT 13
US-08-479-744A-2
Sequence 2, Application US/0847974A
Patent No. 6084067
GENERAL INFORMATION:
   APPLICANT: Freeman, Gordon J.
   APPLICANT: Nadler, Lee M.
   APPLICANT: Gray, Gary S.
   TITLE OF INVENTION: No. 6084067el CTLA4/CD28 Ligands and
   TITLE OF INVENTION: Uses Therefor
   NUMBER OF SEQUENCES: 55
   CORRESPONDENCE ADDRESS:
      ADDRESSEE: LAHIVE & COCKFIELD, LLP
      STREET: 60 State Street
      CITY: Boston
      STATE: Massachusetts
      COUNTRY: USA
      ZIP: 02109
   COMPUTER READABLE FORM:
      MEDIUM TYPE: Floppy disk
      COMPUTER: IBM PC compatible
      OPERATING SYSTEM: PC-DOS/MS-DOS
      SOFTWARE: Patentin Release #1.0, Version #1.25
   CURRENT APPLICATION DATA:
      APPLICATION NUMBER: US/08/479,744A
      FILING DATE: June 7, 1995
      CLASSIFICATION: 435
```

PRIOR APPLICATION DATA:
    APPLICATION NUMBER: 08/280,757
        FILING DATE: 26-JUL-1994
    APPLICATION NUMBER: 08/109,393
        FILING DATE: 28-AUG-1993
    APPLICATION NUMBER: 08/101,624
        FILING DATE: 26-JULY-1993
    APPLICATION NUMBER: 08/147,773
        FILING DATE: 3-NOV-1993
ATTORNEY/AGENT INFORMATION:
    NAME: Mandragouras, Amy E.
    REGISTRATION NUMBER: 36,207
    REFERENCE/DOCKET NUMBER: RPI-004CP3
TELECOMMUNICATION INFORMATION:
    TELEPHONE: (617) 227-7400
    TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
    LENGTH: 329 amino acids
    TYPE: amino acid
    TOPOLOGY: linear
    MOLECULE TYPE: protein
US-08-479-744A-2

Query Match   11.6%; Score 176.5; DB 3; Length 329;
Best Local Similarity 23.18%; Pred. No. 4.1e-10;
Matches 73; Conservative 57; Mismatches 109; Indels 77; Gaps 15;

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Qy  18 AFTITAPKDLYVVEY-GSNVTMECRFPVERELDLLALVVYWEKEDEQVIQFV-AGEEDLK  75
          ||::|  |||   |     : |||| |:| :|||||:|||||||||||||||  :||||:
Db  17 AFLLSGAAPLKIQAYFNETADLPCQFANSQNQSLSELVVFWQDQENLVLNEVYLGKEKFD  76

Qy  76 PQHSNFRGRASLPKDQLLKGNAALQITDVKLQDAGVYCCIISYGGADYKRITLKVNAPYR 135
          |::|   |  |:|  |||  |  : |||| |: |||||:|| |:|||||||||||||:
Db  77 SVHSKYMGRTSFDSD----SWTLRLHNLQIKDKGLYQCII----HHKKPTGMIR--IH 124

Qy 136 KINQRISVDPATSEHELI----CQA-EGYPEAEVIWTNSDHQPVSGKRSV 180
          |:|   |:| |::|||   |||  |   ||||||||||||||| |:|
Db 125 QMNSELSVLANFSQPEIVPISNITENVYINLTCSSIHGYPEPK------KMSV 171

Qy 181 -----TTSRTEGM-------LLNVISSLRV--NATANDVFYC-----TFWRSQP 215
             |:|:||||       |||:||||:|   ||||||||||     | | |:|
Db 172 LLRTKNSTIEYDGIMQKSQDNVTELYDVSISLSVSFPDVTSNMTIFCILETDKTRLLSSP 231

Qy 216 GQNHTAELIIPELPATHPPQNRTHWV--LLGSILLFLIVVSTVLLFLRKQVRMLDVEKCG 273
          |:| |||| | | | | |     |  ||||:||||||||||||||||||||||| |||
Db 232 --FSIELEDPQPPPDHIP----WITAVLPTVIICVWVFCLILWKWKKKKRPRNSYKCG 283

Qy 274 VEDTSSKNRNDTQFEE 289
          :|:|  |||||:|
Db 284 TNTMEREESEQTKKRE 299
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RESULT 14
US-08-280-757B-2
Sequence 2, Application US/0828075 7B
Patent No. 6130316
GENERAL INFORMATION:
    APPLICANT: Freeman, Gordon J.
    APPLICANT: Nadler, Lee M.
    APPLICANT: Gray, Gary S.
    APPLICANT: Greenfield, Edward
    TITLE OF INVENTION: No. 61303l6el CTLA4/CD28 Ligands and
        Uses Therefor
    NUMBER OF SEQUENCES: 53
    CORRESPONDENCE ADDRESS:
    ADDRESSEE: LAHIVE & COCKFIELD
    STREET: 60 State Street, Suite 510
    CITY: Boston
    STATE: Massachusetts
    COUNTRY: USA
    ZIP: 02109

COMPUTER READABLE FORM:
    MEDIUM TYPE: Floppy disk
    COMPUTER: IBM PC compatible
    OPERATING SYSTEM: PC-DOS/MS-DOS
    SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
    APPLICATION NUMBER: US/08/280,757B
        FILING DATE: 26-JUL-1994
PRIOR APPLICATION DATA:
    CLASSIFICATION: 435
    APPLICATION NUMBER: 08/101,624
        FILING DATE: 26-JULY-1993
    APPLICATION NUMBER: 08/109,393
        FILING DATE: 19-AUG-1993
    APPLICATION NUMBER: 08/147,773
        FILING DATE: 3-NOV-1993
ATTORNEY/AGENT INFORMATION:
    NAME: Mandragouras, Amy E.
    REGISTRATION NUMBER: 36,207
    REFERENCE/DOCKET NUMBER: RPI-004CP2
TELECOMMUNICATION INFORMATION:
    TELEPHONE: (617) 227-7400
    TELEFAX: (617) 227-5941
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
    LENGTH: 329 amino acids
    TYPE: amino acid
    TOPOLOGY: linear
    MOLECULE TYPE: protein
US-08-280-757B-2

Query Match   11.6%; Score 176.5; DB 3; Length 329;
Best Local Similarity 23.18%; Pred. No. 4.1e-10;
Matches 73; Conservative 57; Mismatches 109; Indels 77; Gaps 15;

```
Qy  18 AFTITAPKDLYVVEY-GSNVTMECRFPVERELDLLALVVYWEKEDEQVIQFV-AGEEDLK  75
          ||::|  |||   |     : |||| |:| :|||||:|||||||||||||||  :||||:
Db  17 AFLLSGAAPLKIQAYFNETADLPCQFANSQNQSLSELVVFWQDQENLVLNEVYLGKEKFD  76

Qy  76 PQHSNFRGRASLPKDQLLKGNAALQITDVKLQDAGVYCCIISYGGADYKRITLKVNAPYR 135
          |::|   |  |:|  |||  |  : |||| |: |||||:|| |:|||||||||||||:
Db  77 SVHSKYMGRTSFDSD----SWTLRLHNLQIKDKGLYQCII----HHKKPTGMIR--IH 124

Qy 136 KINQRISVDPATSEHELI----CQA-EGYPEAEVIWTNSDHQPVSGKRSV 180
          |:|   |:| |::|||   |||  |   ||||||||||||||| |:|
Db 125 QMNSELSVLANFSQPEIVPISNITENVYINLTCSSIHGYPEPK------KMSV 171

Qy 181 -----TTSRTEGM-------LLNVISSLRV--NATANDVFYC-----TFWRSQP 215
             |:|:||||       |||:||||:|   ||||||||||     | | |:|
Db 172 LLRTKNSTIEYDGIMQKSQDNVTELYDVSISLSVSFPDVTSNMTIFCILETDKTRLLSSP 231

Qy 216 GQNHTAELIIPELPATHPPQNRTHWV--LLGSILLFLIVVSTVLLFLRKQVRMLDVEKCG 273
          |:| |||| | | | | |     |  ||||:||||||||||||||||||||||| |||
Db 232 --FSIELEDPQPPPDHIP----WITAVLPTVIICVWVFCLILWKWKKKKRPRNSYKCG 283

Qy 274 VEDTSSKNRNDTQFEE 289
          :|:|  |||||:|
Db 284 TNTMEREESEQTKKRE 299
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RESULT 15
PCT-US95-02576-23
Sequence 23, Application PC/TUS9502576
GENERAL INFORMATION:
    APPLICANT:
    TITLE OF INVENTION: Novel Forms of T Cell Costimulatory Molecules
        and Uses Therefor
    NUMBER OF SEQUENCES: 65
    CORRESPONDENCE ADDRESS:
    ADDRESSEE: LAHIVE & COCKFIELD
    STREET: 60 State Street, suite 510
    CITY: Boston

;   STATE: Massachusetts
;   COUNTRY: USA
;   ZIP: 02109-1875
;   COMPUTER READABLE FORM:
;   MEDIUM TYPE: Floppy disk
;   COMPUTER: IBM PC compatible
;   OPERATING SYSTEM: PC-DOS/MS-DOS
;   SOFTWARE: ASCII Text
;   CURRENT APPLICATION DATA:
;   APPLICATION NUMBER:
;   FILING DATE:
;   PRIOR APPLICATION DATA:
;   APPLICATION NUMBER: US 08/205,697
;   FILING DATE: 02-Mar-1994
;   ATTORNEY/AGENT INFORMATION:
;   NAME: Mandragouras, Amy E.
;   REGISTRATION NUMBER: 36,207
;   REFERENCE/DOCKET NUMBER: BWI-120CPPC
;   TELECOMMUNICATION INFORMATION:
;   TELEPHONE: (617)227-7400
;   TELEFAX: (617)227-5941
;   INFORMATION FOR SEQ ID NO: 23:
;   SEQUENCE CHARACTERISTICS:
;   LENGTH: 329 amino acids
;   TYPE: amino acid
;   TOPOLOGY: linear
;   MOLECULE TYPE: protein

PCT-US95-02576-23

Query Match   11.6%;   Score 176.5; DB 4;   Length 329;
Best Local Similarity   23.1%;   Pred. No. 4.1e-10;
Matches 73; Conservative 57; Mismatches 109; Indels 77; Gaps 15;

Qy 18 AFTITAPKDLYVVEY-GSNVTMECRFPVVERELDLIALVVYWEKEDEQVIQFV-AGEEDLK 75
        | |: | :| : | | | :|||:|: :: : | | : |:|
Db 17 AFLLSGAAPLKIQAYFNETADLPCQFANSQNQSLSELVVFWQDQENLVLNEVYLGKEKFD 76

Qy 76 PQHSNFRGRASLPKDQLLKGNAALQITDVKLQDAGVYCCIISYGGADYKRITLKVNAPYR 135
        | | ||| : | ||| | | | | ||| :: || | || ||
Db 77 SVHSKYMGRTSFDSD----SWTLRLHNLQIKDKGLYQCII-----HHKKPTGMIR--IH 124

Qy 136 KINQRISVDPATSEHELI---------------CQA-EGYPEAEVIWTNSDHQPVSGKRSV 180
        :|: :|| : |:|: | ||||| |
Db 125 QMNSELSVLANFSQPEIVPISNITENVYINLTCSSIHGYPEPK-------------KMSV 171

Qy 181 -----TTSRTEGM--------LLNVTSSLRV---NATANDVFYC-----TFWRSQP 215
           :|: | :| || | :|:| | |
Db 172 LLRTKNSTIEYDGIMQKSQDNVTELYDVSISLSVSFPDVTSNMTIFCILETDKTRLLSSP 231

Qy 216 GQNHTAELIIPELPATHPPQNRTHWV--LLGSILLFLIVVSTVLLFLRKQVRMLDVEKCG 273
        | |:: | : :| | || | | ::|| |: :| | | |: | |
Db 232 ---FSIELEDPQPPDHIP-----WITAVLPTVIICVWFCLILWKKKKRPRNSYKCG 283

Qy 274 VEDTSSKNRNDTQFEE 289
        | : |: || :|
Db 284 TNTMEREESEQTKKRE 299

Search completed: March 17, 2001, 09:44:52
Job time: 91 sec